

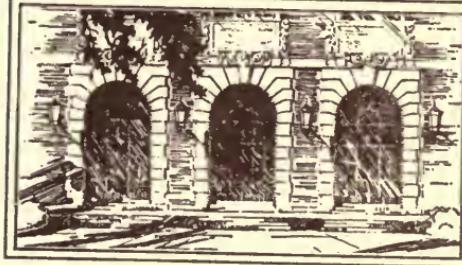
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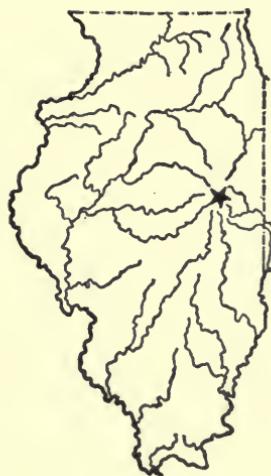
UNIVERSITY OF ILLINOIS Agricultural Experiment Station

BULLETIN No. 342

LIVESTOCK TRUCKAGE RATES IN ILLINOIS

With a Comparison of Marketing Expense by
Truck and by Rail

By R. C. ASHBY



URBANA, ILLINOIS, FEBRUARY, 1930

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The writer is indebted to the railroad companies for rate information cheerfully supplied; to officials of stockyards companies for assistance rendered; to the transportation department of the Illinois Agricultural Association for material assistance in compiling freight-rate data; and to the Producers Commission Associations of Peoria, East St. Louis, and Chicago for access to their records. Particular credit is due Mr. Cary D. Palmer, Assistant in Animal Husbandry, for service in directing the tabulation and summarization of the mass of statistical work involved in this study.

LIVESTOCK TRUCKAGE RATES IN ILLINOIS

With a Comparison of Marketing Expense by Truck and by Rail

By R. C. ASHBY, Associate Chief in Livestock Marketing

Transportation charges and service are matters of basic interest to all stockmen. Charges are of interest because they constitute about two-thirds of the usual cash marketing expense,¹ service, because it may and often does affect directly both shrinkage and selling price. When marketing by truck, as when marketing by rail, transportation charges are the largest single item of expense. However, despite a rapidly increasing movement of livestock by truck, but little information has been available regarding livestock truckage rates as applied to extensive areas. This study was planned and carried out in order to secure data from which such information could be developed.

Just how rapidly livestock trucking has increased may be seen by comparing truck receipts at two-year intervals from 1920 to 1929, for eight leading markets (Table 1). The year 1929 shows an increase of 18.2 percent over 1928 in numbers of hogs trucked in to the eight markets and an increase of 20.9 percent in all livestock trucked in.

TABLE 1.—TOTAL NUMBERS OF LIVESTOCK TRUCKED TO EIGHT MARKETS, 1920 TO 1928: INDIANAPOLIS, CHICAGO, EAST ST. LOUIS, ST. JOSEPH, MO., KANSAS CITY, OMAHA, SIOUX CITY, IA., AND ST. PAUL

Year	Total receipts of trucked hogs	Percentage increase for hogs ¹	Total truck receipts, all livestock	Percentage increase, all livestock ¹
1920.....	1 467 651	.....	2 058 696	.....
1922.....	1 769 816	20.6	2 702 568	31.3
1924.....	2 562 897	74.6	3 671 773	78.3
1926.....	3 189 897	117.3	4 914 487	138.7
1928.....	6 245 331	325.5	8 906 556	332.6
1929.....	7 384 497	403.2	10 774 446	423.4

¹Calculated with 1920 receipts as a base.

That the use of trucks for shipping livestock to Illinois markets has continued to increase during 1929 is shown by the data in Table 2.

¹Bulletin 29, Bureau of Railway Economics, American Railway Association, Washington, D. C., reports data on 19,701 cars of livestock marketed during 1924 to 1927. These data indicate that freight charges constituted 64.7 percent of the total freight and terminal marketing expense.

TABLE 2.—NUMBERS OF LIVESTOCK TRUCKED TO THREE ILLINOIS MARKETS, 1928 AND 1929

	East St. Louis	Chicago	Peoria	Totals
<i>Cattle</i>				
1928 truck receipts.....	61 636	71 014	27 495	160 145
1929 truck receipts.....	92 205	100 460	28 779	221 444
Increase in 1929.....	30 569	29 446	1 284	61 299
Percentage increase in 1929.....	49.60	41.47	4.67	38.28
<i>Calves</i>				
1928 truck receipts.....	70 006	23 540	39 941	133 487
1929 truck receipts.....	102 964	35 545	41 445	179 954
Increase in 1929.....	32 958	12 005	1 504	46 467
Percentage increase in 1929.....	47.08	51.00	3.77	34.81
<i>Hogs</i>				
1928 truck receipts.....	412 746	304 957	554 492	1 272 195
1929 truck receipts.....	734 337	379 481	597 531	1 711 349
Increase in 1929.....	321 591	74 524	43 039	439 154
Percentage increase in 1929.....	77.91	24.44	7.76	34.52
<i>Sheep</i>				
1928 truck receipts.....	87 219	62 521	11 351	161 091
1929 truck receipts.....	129 822	88 498	13 349	231 669
Increase in 1929.....	42 603	25 977	1 998	70 578
Percentage increase in 1929.....	48.85	41.55	17.60	43.81
<i>All livestock</i>				
1928 truck receipts.....	631 607	462 032	633 279	1 726 918
1929 truck receipts.....	1 059 328	603 984	681 104	2 344 416
Increase in 1929.....	427 721	141 952	47 825	617 498
Percentage increase in 1929.....	67.72	30.72	7.55	35.76

NATURE OF DATA

In order to study livestock truckage rates satisfactorily, data from actual shipments are needed. Terminal livestock markets are the logical places to secure such information. Accordingly livestock commission firms were approached with a view to securing the necessary facts from which the study could be developed. All of them expressed interest but few were in a position to cooperate. Fortunately three of the largest commission firms made available their complete records of truck consignments for the full calendar year of 1927 and later for the month of December, 1928.

Suitable forms were prepared and the required information, covering truck consignments from points in Illinois, was transcribed from the duplicate accounts sale at each of the three offices. From these forms the primary data were tabulated, organized and summarized. This involved the use, covering 1927, of over 19,600 accounts sale from Peoria, over 12,000 from East St. Louis, and more than 3,000 from Chicago. Supplemental data covering December, 1928, included over 2,000 consignments at Peoria, more than 2,000 at East St. Louis, and over 800 at Chicago. The numbers of livestock included in the transcribed records were 19.5, 14.2, and 4.4 percent respectively of the total truck deliveries of cattle and calves received at the three

markets; 26.9, 15.4, and 12.8 percent of all trucked hogs; and 24, 11.8, and 16.7 percent of all trucked sheep (Table 3).

TABLE 3.—NUMBERS OF LIVESTOCK TRUCKED TO THREE ILLINOIS MARKETS DURING 1927 AND NUMBERS OF EACH KIND OF LIVESTOCK INCLUDED IN THE STUDY

Kind of livestock	Peoria	East St. Louis	Chicago	Totals
<i>Cattle and calves</i>				
Total 1927 truck receipts.....	63 653	83 330	65 983	212 966
Included in transcribed records.....	12 418	11 805	2 916	27 139
Percent included.....	19.5	14.2	4.4	12.7
Number included in this study.....	6 858	6 625	2 001	15 484
Percent included in this study.....	10.8	8.0	3.0	7.2
<i>Hogs</i>				
Total 1927 truck receipts.....	412 287	227 598	148 251	788 136
Included in transcribed records.....	110 907	34 960	18 910	164 777
Percent included.....	26.9	15.4	12.8	20.9
Number included in this study.....	80 576	16 559	14 851	111 986
Percent included in this study.....	19.5	7.3	10.0	14.2
<i>Sheep</i>				
Total 1927 truck receipts.....	9 600	65 695	39 209	114 504
Included in transcribed records.....	2 307	7 742	6 547	16 596
Percent included.....	24.0	11.8	16.7	14.5
Number included in this study.....	930	3 248	4 659	8 837
Percent included in this study.....	9.7	4.9	11.0	7.7

However, not all the data transcribed were usable. For example, where two or more kinds of livestock were included in one account sale and covered by one truckage charge, they could not be listed separately by species. Moreover, numerous consignments showed no truckage charge, evidently being delivered by owners' or by neighbors' trucks or having had the truckage paid in advance.¹ Rejections from these causes totaled 72,205 head of livestock, as shown in Table 4. The proportions of total truck receipts that were usable for the purpose of this study ranged from a maximum of 19.5 percent to a mini-

TABLE 4.—NUMBERS OF LIVESTOCK INCLUDED IN MIXED SHIPMENTS OR NOT SHOWING TRUCKAGE CHARGES AND THEREFORE NOT INCLUDED IN STUDY, 1927

Kind of livestock	Peoria	East St. Louis	Chicago	Totals
<i>Cattle and calves</i>				
In mixed shipments.....	2 226	1 651	326	4 203
No truckage charge.....	3 334	3 529	589	7 452
<i>Hogs</i>				
In mixed shipments.....	7 295	4 449	1 029	12 773
No truckage charge.....	23 036	13 952	3 030	40 018
<i>Sheep</i>				
In mixed shipments.....	628	1 810	646	3 084
No truckage charge.....	749	2 684	1 242	4 675
Totals.....	37 268	28 075	6 862	72 205

¹Bulletin 440 of the Ohio Station, page 13, reporting on livestock truckage from 37 counties lists 40 percent of the trucking as done by farmers, 47.7 percent by commercial truckers, and 12.3 percent by other agencies.



FIG. 1.—UNLOADING LIVESTOCK TRUCKS UNDER DIFFICULTIES

With truck receipts increasing steadily, such facilities as shown above are obviously inadequate for efficient handling.

mum of 3.0 percent (Table 3). From the three markets records of 136,307 head of livestock marketed by truck were analyzed and used in this study. With the 18,748 head included in the analysis for De-

TABLE 5.—PEORIA UNION STOCK YARDS: SUMMARY OF 1927 TRUCK RECEIPTS INCLUDED IN STUDY

Zone	Miles to market	Consignments	Head	Total market weight	Average truckage charge per hundred-weight
Cattle and calves					
		number	number	lbs.	cents
1.	0-15	819	1 290	662 190	31.9
2.	16-25	1 242	2 029	1 047 480	38.2
3.	26-35	1 198	1 906	922 290	43.8
4.	36-45	780	1 256	644 300	48.7
5.	46-55	164	309	172 920	50.2
6.	56-65	40	67	36 970	53.3
7.	66-75	1	1	180	50.0
Hogs					
1.	0-15	1 101	11 153	2 627 940	26.6
2.	16-25	2 694	28 281	6 757 910	33.0
3.	26-35	2 612	22 286	5 375 475	40.2
4.	36-45	1 774	15 346	3 624 120	45.8
5.	46-55	333	2 907	692 300	46.6
6.	56-65	49	496	112 650	49.0
7.	66-75	9	107	27 590	56.5
Sheep					
1.	0-15	23	303	26 840	37.6
2.	16-25	54	274	26 010	43.7
3.	26-35	36	194	21 060	46.2
4.	36-45	26	136	13 420	57.8
5.	46-55	4	14	1 400	76.4
6.	56-65	1	9	580	41.4



FIG. 2.—UNION STOCK YARDS, PEORIA

Convenient facilities increase promptness and efficiency in handling truck-ins.



FIG. 3.—AFTER UNLOADING, CHICAGO UNION STOCK YARDS

Livestock trucking makes its strongest appeal to the stockman because of its convenience and because of the greater flexibility of movement permitted.

ember, 1928, as discussed later, total receipts of 155,055 head were studied.

From the transcription sheets data were assembled by shippers' post offices and tabulated separately by species. Summaries were

then prepared by species and by truckage zones. From these summaries weighted average truckage rates were calculated by truckage zones, Zone 1 including all territory within 15 miles of the market; Zone 2 all territory within 16 to 25 miles; Zone 3 all territory within

TABLE 6.—EAST ST. LOUIS NATIONAL STOCK YARDS: SUMMARY OF 1927 TRUCK RECEIPTS INCLUDED IN STUDY

Zone	Miles to market	Consignments	Head	Total market weight	Average truckage charge per hundred-weight
Cattle and calves					
1.	0-15	30	36	18 705	43.5
2.	16-25	654	877	443 235	47.1
3.	26-35	792	1 123	589 350	51.8
4.	36-45	837	1 236	606 140	52.4
5.	46-55	1 360	2 049	811 245	55.0
6.	56-65	394	642	211 860	67.1
7.	66-75	228	327	147 375	65.5
8.	76-85	41	79	32 035	65.5
9.	86-95	90	134	60 295	61.8
10.	96-105	65	119	77 490	61.7
11.	106-115	2	3	1 995	74.9
Hogs					
1.	0-15	14	85	20 970	33.7
2.	16-25	305	1 985	412 275	40.7
3.	26-35	404	2 328	489 400	48.4
4.	36-45	482	4 174	905 375	45.7
5.	46-55	590	4 572	932 325	51.7
6.	56-65	187	1 486	305 270	52.6
7.	66-75	101	706	141 770	59.3
8.	76-85	43	646	136 020	53.6
9.	86-95	43	443	88 560	51.8
10.	96-105	17	91	18 690	58.6
11.	106-115	5	43	8 960	77.2
Sheep					
1.	0-15	3	41	2 740	52.9
2.	16-25	31	174	13 460	63.0
3.	26-35	44	229	19 180	60.8
4.	36-45	62	431	31 670	68.2
5.	46-55	160	1 302	101 170	62.2
6.	56-65	44	356	27 990	66.5
7.	66-75	37	282	25 285	69.1
8.	76-85	25	243	18 990	74.7
9.	86-95	16	151	10 810	76.6
10.	96-105	...	...	...	...
11.	106-115	...	...	...	...
12.	116-125	2	39	2 400	75.0

26 to 35 miles; and so outward by 10-mile intervals as far as truck receipts required (Figs. 12, 13, 14).

One may ask, why not use the actual mileage for each consignment? There were two reasons: first, such a study would have consumed much more time and money than were available; second, mileage from the same farm to the same market varies from trip to trip according to roads and weather conditions, except where there are direct hard roads. The possibility that assemblage of consignments on the basis of shippers' post offices may tend to a slight error where such points are located just at zone edges is recognized, but it may

be expected that the errors would be as often on one side as on the other of the zone line.

Basic data, assembled in the form of zone summaries, are presented in Tables 5, 6, and 7. All subsequent discussion and presentation are developed from this material. Table 5 shows for Peoria by livestock species, the zone, distance from market, number of consignments, total number of head shipped, total weight at market, and average

TABLE 7.—CHICAGO UNION STOCK YARDS: SUMMARY OF 1927 RECEIPTS INCLUDED IN STUDY

Zone	Miles to market	Consignments	Head	Total market weight	Average truckage charge per hundred-weight
Cattle and calves					
1.	0-15	10	20	18 610	25.0
2.	16-25	51	198	177 190	24.9
3.	26-35	129	523	520 095	26.2
4.	36-45	168	588	598 960	28.1
5.	46-55	138	307	269 545	39.3
6.	56-65	90	210	175 650	46.9
7.	66-75	38	93	76 780	45.6
8.	76-85	6	18	13 530	56.9
9.	86-95	7	30	12 060	63.7
10.	96-105	...	...	...	...
11.	106-115	1	6	6 250	75.0
12.	116-125	1	3	460	97.8
13.	126-135	2	5	730	102.7
Hogs					
1.	0-15	3	38	8 060	32.0
2.	16-25	46	390	95 100	24.5
3.	26-35	292	2 821	749 425	34.2
4.	36-45	375	4 418	1 128 530	30.5
5.	46-55	315	3 457	881 500	33.2
6.	56-65	291	2 483	629 370	44.3
7.	66-75	72	558	143 360	45.1
8.	76-85	30	190	47 110	57.3
9.	86-95	20	317	80 410	53.0
10.	96-105	7	97	21 340	64.4
11.	106-115	3	21	3 850	75.5
12.	116-125	5	59	16 610	60.2
13.	126-135	1	12	2 800	50.0
Sheep					
1.	0-15	..	..	..	..
2.	16-25	1	44	3 640	35.0
3.	26-35	14	262	22 060	32.5
4.	36-45	52	1 013	104 510	32.9
5.	46-55	39	899	76 530	37.8
6.	56-65	42	1 503	126 060	40.2
7.	66-75	1	88	9 050	35.0
8.	76-85	7	105	9 040	72.8
9.	86-95	10	234	18 140	95.2
10.	96-105	18	189	18 420	91.6
11.	106-115	5	164	13 710	79.8
12.	116-125	6	146	10 085	29.6
13.	126-135	1	12	850	141.2

truckage charge¹ per hundredweight of all truck receipts included in the study. Similar information for East St. Louis and for Chicago is given in Tables 6 and 7.

¹The average truckage charge is obtained by dividing the total truckage charge for each kind of livestock within each zone by the total weight of each kind in each zone.

TABLE 8.—COMPARISON OF AVERAGE LIVESTOCK TRUCKAGE RATES IN THREE ILLINOIS MARKET AREAS, 1927: COMPILED FROM TABLES 5, 6, AND 7
(Cents per hundredweight)

Zone	Miles to market	Rates on cattle and calves			Rates on hogs			Rates on sheep		
		Peoria	East St. Louis	Chicago	Peoria	East St. Louis	Chicago	Peoria	East St. Louis	Chicago
1.	0-15	31.9	43.5	25.0	26.6	33.7	32.0	37.6	52.9	35.0
2.	16-25	38.2	47.1	24.9	33.0	40.7	24.5	43.7	63.0	32.5
3.	26-35	43.8	51.8	26.2	40.2	48.4	34.2	46.2	60.8	32.9
4.	36-45	48.7	52.4	28.1	45.8	45.7	30.5	57.8	68.2	37.8
5.	46-55	50.2	55.0	39.3	46.6	51.7	33.2	76.4	62.2	40.2
6.	56-65	53.3	67.1	46.9	49.0	52.6	44.3	41.4	66.5	69.1
7.	66-75	50.0	65.5	45.6	56.5	59.3	45.1	....	74.7	72.8
8.	76-85	....	65.5	56.9	....	53.6	57.3	....	76.6	95.2
9.	86-95	....	61.8	63.7	....	51.8	53.0	....	....	91.6
10.	96-105	....	61.7	....	....	58.6	64.4	....	....	79.8
11.	106-115	....	74.0	....	....	77.2	75.5	....	....	129.6
12.	116-125	....	....	97.8	....	....	60.2	....	....	....

FACTORS DETERMINING TRUCKAGE RATES

The reader will note inconsistencies in the average truckage rates by zones and by species, increases in rates not always corresponding with increases in distance from market. In Zone 6 of the Peoria district, for instance, there is a rate of 41 cents on sheep as against 76 cents in Zone 5. In the East St. Louis district the more striking inconsistencies occur in Zones 8, 9, and 10 on cattle, in Zones 4, 8, 9, and 10 on hogs, and in Zones 2, 3, 4, and 12 on sheep. In the Chicago district the greatest variations appear in Zones 1 and 7 on cattle, Zones 1, 4, 9, 12, and 13 on hogs, and Zones 1, 7, 10, and 11 on sheep.

Since truckage rates are not passed on or fixed by any regulatory or supervisory agency, it is to be expected that increases in average truckage rates from zone to zone would not be entirely regular or uniform. Factors influencing the establishment of rates are: intensity of trucking competition; introduction of larger trucks with lower rates in some sections; competition by well-organized and well-managed shipping associations; mileage and distribution of hard roads; development of a back-haul business; truck-rate wars; and comparative freight rates. However, despite varying factors, considerable regularity of rate increases from zone to zone is shown.

In order to facilitate comparisons of rates by species and by markets, Table 8 has been compiled from Tables 5, 6, and 7. A materially lower scale of truckage rates, it will be noted, was in effect in the Chicago area than in Peoria or East St. Louis areas. Since this study contemplated no analysis of factors responsible for truckage rates, the writer does not undertake to explain them.

COMPARISON OF TRUCK AND FREIGHT RATES¹

Average truck and freight rates and the gross differences between these two kinds of rates are shown by zones and by markets in Table 9, and the data on truck rates are graphically displayed in Figs. 4 to 6. Adjustments for various other marketing expenses that modify the gross differences in truckage and freight rates are discussed on pages 145 to 149. Considering now only the gross differences in rates (Table 9), we find that at Peoria the average truck rates, zone by zone, were roughly about three times the average freight rates for the corresponding areas. At East St. Louis the truckage rates, especially for the shorter distances, were in several cases as much as four times the corresponding freight rates. At Chicago the truckage rates were usually from two to three times the corresponding freight rates.

¹Ohio Agr. Exp. Sta. Bul. 440, 20. 1929: So. Dak. State College Bul. 223, 18. 1927.

TABLE 9.—GROSS DIFFERENCES BETWEEN TRUCK AND RAIL RATES, USING WEIGHTED AVERAGE RATES BY ZONES FOR THREE ILLINOIS MARKET AREAS, 1927

(Cents per hundredweight on straight earloads, same species of livestock)

Zone	Cattle and calves			Hogs			Sheep		
	Truck	Freight	Gross difference	Truck	Freight	Gross difference	Truck	Freight	Gross difference
Peoria									
1.	cents	cents	cents	cents	cents	cents	cents	cents	cents
2.	31.9	11.2	20.7	26.6	12.1	14.5	37.6	12.6	25.0
3.	38.2	12.3	25.9	40.0	14.1	18.9	43.7	15.4	28.3
4.	43.8	14.4	29.4	40.2	15.8	24.4	46.2	18.4	27.8
5.	48.7	15.3	33.4	45.8	17.1	28.7	57.8	19.2	38.6
6.	50.2	15.1	35.1	46.6	17.9	28.7	76.4	19.8	56.6
7.	53.3	16.9	36.4	49.0	19.5	29.5	41.4	24.0	17.4
71.	50.5	17.5	32.5	56.5	19.5	37.0	....	....	....
East St. Louis									
1.	cents	cents	cents	cents	cents	cents	cents	cents	cents
2.	43.5	12.1	31.4	33.7	14.2	19.5	52.9	12.5	40.4
3.	47.1	12.7	34.4	40.7	14.7	26.0	63.0	12.7	50.3
4.	51.8	13.2	38.6	48.4	15.3	33.1	60.8	14.1	46.7
5.	52.4	13.7	37.4	45.7	17.0	28.7	68.2	16.1	52.1
6.	55.0	15.8	39.2	51.7	18.6	33.1	62.2	17.4	44.8
7.	67.1	18.3	48.8	52.6	20.5	32.1	66.5	20.4	46.1
8.	65.5	18.9	46.6	60.3	21.0	38.3	60.1	19.6	49.5
9.	65.5	19.5	46.0	53.6	24.1	29.5	74.7	25.0	49.7
10.	61.8	23.8	38.0	51.8	26.1	25.7	76.6	24.6	52.0
11.	61.7	19.6	42.1	56.6	22.4	36.2	....	....	....
111.	74.9	21.9	53.0	77.2	24.5	52.7	....	....	....
Chicago									
1.	cents	cents	cents	cents	cents	cents	cents	cents	cents
2.	25.0	10.0	15.0	32.0	11.5	20.5	35.0	14.0	21.0
3.	24.9	11.0	14.9	34.5	12.0	12.5	32.5	15.6	16.9
4.	26.2	12.3	13.9	34.2	14.5	19.7	32.9	17.0	15.9
5.	28.1	12.4	15.7	30.5	15.1	15.4	37.8	18.3	19.5
6.	39.3	13.5	25.8	33.2	16.0	17.2	40.2	19.7	20.5
7.	46.9	15.0	31.9	44.3	17.5	26.8	35.0	20.5	14.5
8.	45.6	16.3	29.3	45.1	18.5	26.0	72.8	21.9	50.9
9.	56.9	16.8	40.1	57.3	20.0	37.3	95.2	23.9	71.3
10.	63.7	22.0	41.7	53.0	23.0	30.0	91.6	24.6	67.0
11. ....	....	....	....	64.4	20.0	44.4	73.8	24.6	54.6
12. ....	....	....	....	75.5	20.5	55.0	128.6	28.3	101.3
13. ....	....	....	....	60.2	25.3	34.9	141.2	28.0	113.2

¹Data not available for Zones 8 to 12, Peoria, and Zone 12, East St. Louis.

TABLE 10.—COMPARISON OF TRUCK AND RAIL RATES IN THREE ILLINOIS MARKET AREAS, 1927
(Cents per hundredweight per mile)

Zone	Miles to ¹ market	Peoria		East St. Louis		Chicago	
		Truck	Rail	Truck	Rail	Truck	Rail
Cattle and calves							
1.	12½	2.6	.9	3.5	1.0	2.0	.8
2.	20	1.9	.6	2.4	.6	1.2	.6
3.	30	1.5	.5	1.7	.4	.9	.4
4.	40	1.2	.4	1.3	.4	.7	.3
5.	50	1.0	.3	1.1	.3	.8	.3
6.	60	.9	.3	1.1	.3	.8	.2
7.	70	.7	.2	.9	.3	.7	.2
8.	80	...	...	.8	.2	.7	.2
9.	90	...	...	.7	.3	.7	.2
10.	100	...	...	.6	.2	...	...
11.	110	...	...	.7	.2	.7	.2
12.	120	...	...	...	...	.8	.1
13.	130	...	...	...	...	.8	.1
Hogs							
1.	12½	2.1	1.0	2.7	1.1	2.6	.9
2.	20	1.6	.7	2.0	.7	1.2	.6
3.	30	1.3	.5	1.6	.5	1.1	.5
4.	40	1.1	.4	1.1	.4	.8	.4
5.	50	.9	.4	1.0	.4	.7	.3
6.	60	.8	.3	.9	.3	.7	.3
7.	70	.8	.3	.8	.3	.6	.3
8.	80	...	...	.7	.3	.7	.3
9.	90	...	...	.6	.3	.6	.3
10.	100	...	...	.6	.2	.6	.2
11.	110	...	...	.7	.2	.7	.2
12.	120	...	...	...	...	.5	.2
13.	130	...	...	...	...	.4	.2
Sheep							
1.	12½	3.0	1.0	4.2	1.0	...	...
2.	20	2.2	.8	3.2	.6	1.8	.7
3.	30	1.5	.6	2.0	.5	1.1	.5
4.	40	1.4	.5	1.7	.4	.8	.4
5.	50	1.5	.4	1.2	.3	.8	.4
6.	60	.7	.4	1.1	.3	.7	.3
7.	70	...	...	1.0	.3	.5	.3
8.	80	...	...	.9	.3	.9	.3
9.	90	...	...	.9	.3	1.1	.3
10.	100	...	...	...	...	.9	.2
11.	110	...	...	...	...	.7	.2
12.	120	...	...	.6	.2	1.1	.2
13.	...	...	...	...	...	...	...

¹Using the median of each zone.

Comparisons of transportation charges alone, however, may be misleading. The differences between truck and rail transportation charges in cents per head for hogs are shown in Fig. 8. From this graph, trucking charges appear as prohibitive except when it is kept in mind that all items of expense for the two methods of transportation are not included here. Actual comparison of expense can only be made after all items have been accounted for as has been done later in Tables 17 and 19 and Fig. 16.

The question of comparative charge per mile per hundredweight, by truck and rail, is sometimes raised. Information on this question

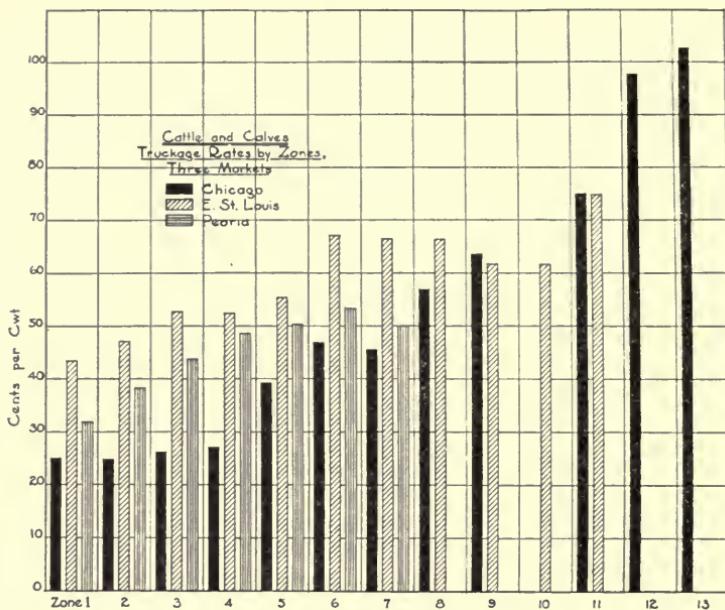


FIG. 4.—CATTLE TRUCKAGE RATES TO CHICAGO, EAST ST. LOUIS, AND PEORIA, 1927

Note the evenness of Chicago rates in the first 4 zones (45 miles), again in Zones 5, 6, and 7, and the rapid increase in Zones 11, 12, and 13. See Table 8.

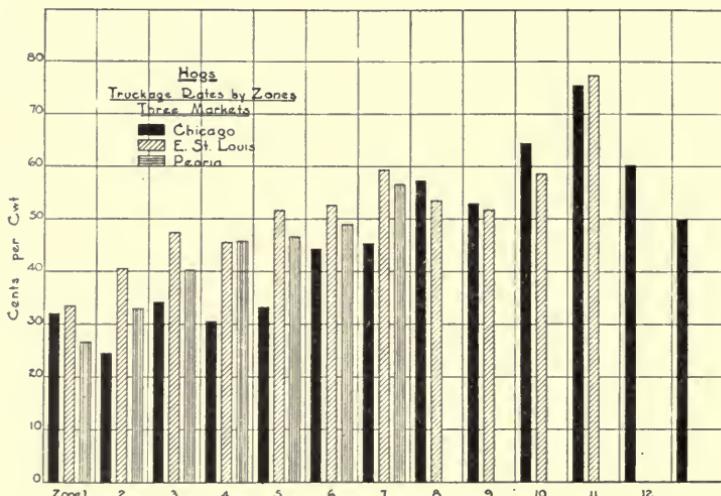


FIG. 5.—HOG TRUCK RATES TO CHICAGO, EAST ST. LOUIS, AND PEORIA, 1927

At Peoria rates increased gradually with distance from market. More irregularity appears in the East St. Louis and Chicago rates. See Table 8, page 126.

is presented in Table 10 in so far as it could be obtained from the data studied. In working out this table an arbitrary distance of 12½ miles is used for Zone 1; each of the other distances is the median for the zone.

To indicate further the relationship between truck and rail rates by zones, their ratio was ascertained by dividing the truck rate in

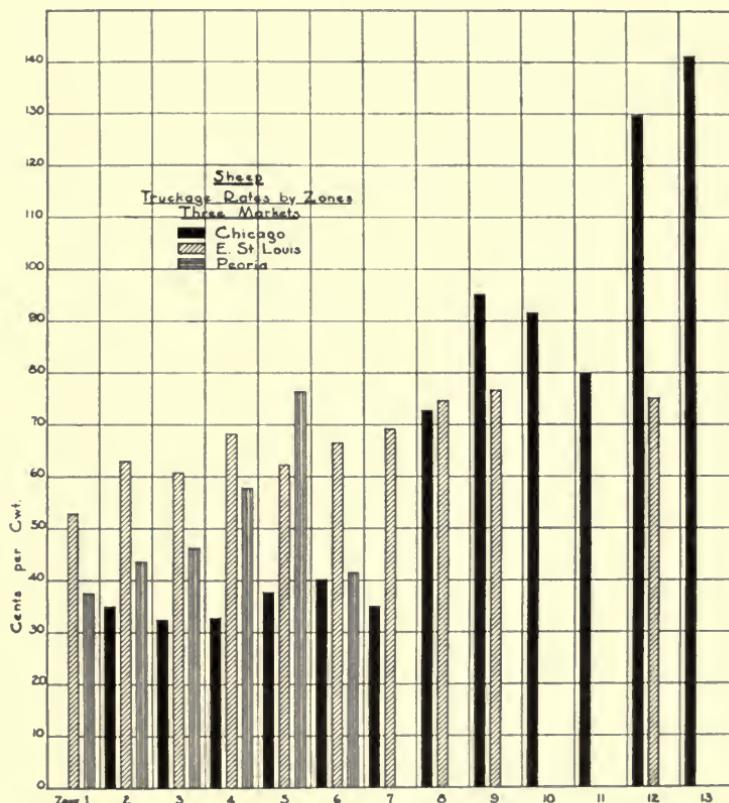


FIG. 6.—SHEEP TRUCKAGE RATES TO CHICAGO, EAST ST. LOUIS, AND PEORIA

Note the relative evenness of the rates into Chicago and East St. Louis in Zones 2 to 7 inclusive and the comparatively high rates for Chicago in the outlying zones. See Table 8.

each case by the rail rate (Table 11 and Fig. 7). Cattle truckage rates, it will be noted by inspection of this table, range from as low as 2 times to as high as 8 times the corresponding freight rates; rates on hogs, from as low as 2 times to as high as 3½ times corresponding freight rates; rates on sheep, from as low as 1¾ times to as high as

TABLE II.—RATIOS OF RAIL TO TRUCK RATES IN THREE ILLINOIS MARKET AREAS: 1927
(Based on average rates per hundredweight)

Zone	Cattle and calves			Hogs			Sheep		
	Peoria	E. St. Louis	Chicago	Peoria	E. St. Louis	Chicago	Peoria	E. St. Louis	Chicago
1.	1 to: 2.80	1 to: 3.50	1 to: 2.50	1 to: 2.10	1 to: 2.29	1 to: 2.45	1 to: 2.89	1 to: 3.00	1 to: 4.20
2.	3.17	4.00	2.00	2.25	2.60	2.87	2.00	2.75	5.33
3.	3.00	4.25	2.25	2.60	3.20	2.20	2.50	4.00	2.57
4.	3.00	3.25	2.33	2.75	2.75	2.20	2.80	4.25	2.20
5.	3.00	3.67	2.67	2.25	2.50	2.33	3.75	4.00	2.00
6.	3.33	3.67	4.00	3.00	3.00	2.33	1.75	2.33	2.33
7.	3.00	3.00	3.50	2.67	2.67	2.00	3.67	1.00	1.07
8.	3.50	4.00	3.50	3.50	3.50	2.33	2.33	3.00	3.33
9.	...	...	2.33	3.50	3.50	2.00	2.00	3.00	3.00
10.	10.	...	3.00	3.00	3.00	3.00	3.00	3.00	3.67
11.	...	...	3.50	3.50	3.50	3.50	3.50	3.50	4.50
12.	...	...	8.00	8.00	8.00	8.00	8.00	8.00	5.50
13.	...	...	...	...	...	...	...	...	5.50

All rail rates are on the basis of carlot shipments.

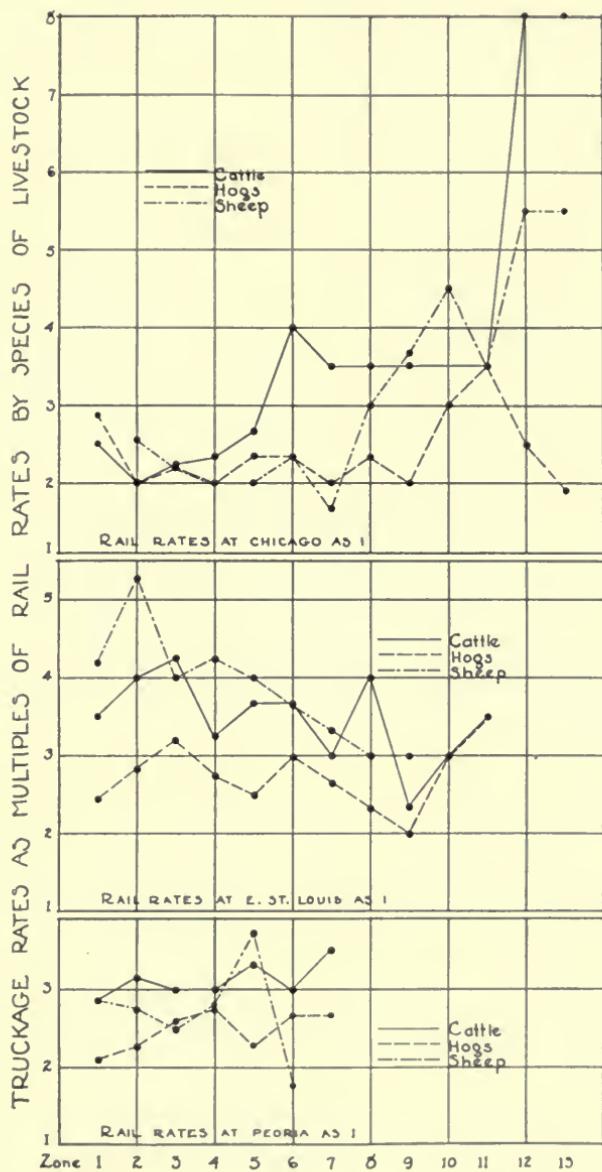


FIG. 7.—LIVESTOCK TRUCKAGE RATES IN 1927 COMPARED WITH FREIGHT RATES

Truckage rates on short hauls were low in proportion to freight rates in the Chicago area but became rapidly higher on long hauls. At East St. Louis the opposite was true. This chart is developed from data in Table 11.

5½ times corresponding freight rates. A general view of 1927 live-stock freight rates may be obtained from Figs. 17 to 22 of Appendix B, pages 170 to 175.

Comparative rates in themselves, however, even tho showing wide differences, may be of less significance in the selection of a method

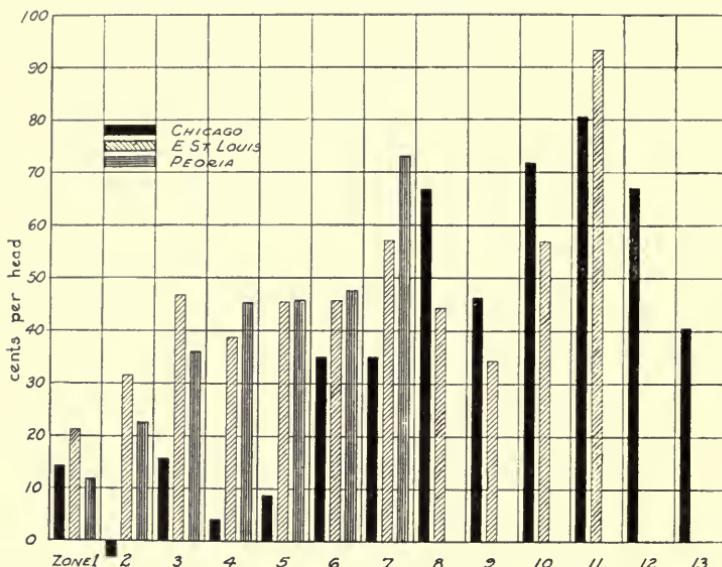


FIG. 8.—DIFFERENCES IN TRUCK AND RAIL RATES ON HOGS PER HEAD, BY MILEAGE ZONES AND BY MARKETS, 1927

The greatest gross saving in marketing hogs by rail is observed in Zone 11 of the East St. Louis area, where the rate per head was 93 cents less by rail than by truck. However, stockmen are less interested in comparative rates than in the differences between the total comparable expense of the two methods of shipping; this difference is developed in Tables 17 and 19 and in Fig. 16.

of shipment than at first appears. Total marketing expense and comparative marketing efficiency should be the determining factors, as discussed later on pages 149 to 162.

ORIGINS OF TRUCKED-IN RECEIPTS

The question of economic trucking distances has been a subject for discussion ever since automobile trucking began to be used. The writer's general observation is that there is no single economic trucking distance, but rather that every set of conditions presents a different problem and decisions must be made in the light of those conditions.

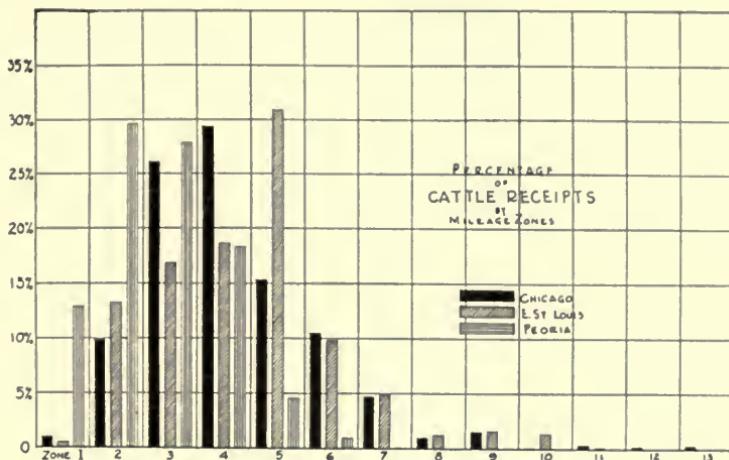


FIG. 9.—ORIGINS OF TRUCKED-IN CATTLE INCLUDED IN THE STUDY AT CHICAGO, EAST ST. LOUIS, AND PEORIA MARKETS, 1927

Peoria receipts of trucked cattle came largely from Zone 2, 16 to 25 miles; Chicago drew the largest proportion from Zone 4, 36 to 45 miles; and East St. Louis from Zone 5, 46 to 55 miles. This chart and Figs. 13 and 14 are based on data in Tables 5, 6, and 7.

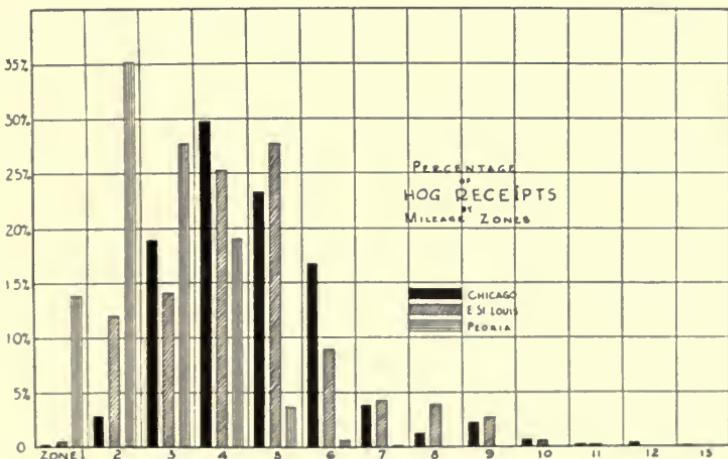


FIG. 10.—ORIGINS OF TRUCKED-IN HOGS INCLUDED IN THE STUDY AT CHICAGO, EAST ST. LOUIS, AND PEORIA MARKETS, 1927

As with cattle receipts, the largest proportion of hog receipts at Peoria came from Zone 2, 16 to 25 miles; at Chicago, from Zone 4, 36 to 45 miles; and at East St. Louis, from Zone 5, 46 to 55 miles.

At Peoria the largest numbers of cattle and calves and of hogs came from Zone 2, a distance of 16 to 25 miles; while at Chicago, Zone 4, 36 to 45 miles, sent the greatest numbers (Figs. 9 and 10). The largest sheep receipts came from Zone 1, 15 miles, at Peoria; from Zone 5, 46 to 55 miles, at East St. Louis; and from Zone 6, 56 to 65 miles, at Chicago (Fig. 11). Peoria drew 88 percent of its cattle and calves and over 95 percent of its hogs and sheep from the first four zones, a radius of 45 miles. At Chicago 66 percent of the

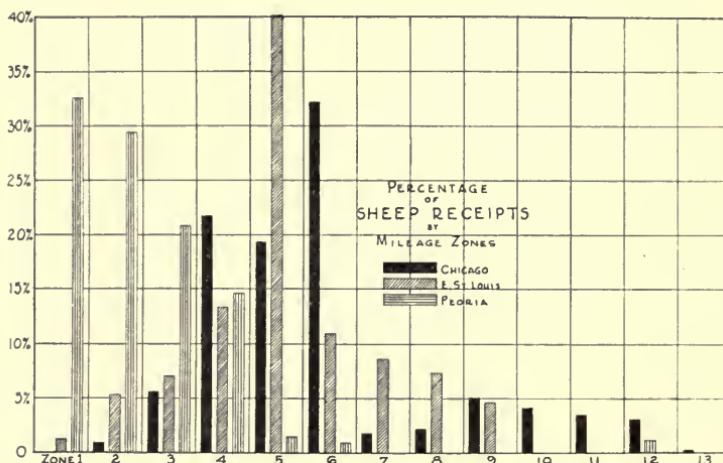


FIG. 11.—ORIGINS OF TRUCKED-IN SHEEP INCLUDED IN THE STUDY AT CHICAGO, EAST ST. LOUIS, AND PEORIA MARKETS, 1927

At Peoria the largest proportion of sheep receipts came from Zone 1, 15 miles; at East St. Louis from Zone 5, 46 to 55 miles; and at Chicago from Zone 6, 56 to 65 miles.

cattle and calves, more than 51 percent of the hogs, and more than 28 percent of the sheep came from within this distance. At East St. Louis (National Stock Yards) 50 percent of the cattle and calves, slightly over 51 percent of the hogs, and about 27 percent of the sheep came from such a radius. In comparison it is of interest that Ohio Bulletin 440,¹ reporting the 1928 livestock truck receipts at Cleveland, lists 93 percent of the cattle, 69 percent of the calves, 31 percent of the hogs, and 44 percent of the sheep as being trucked less than 50 miles; at Cincinnati 84 percent of the cattle, 86 percent of the calves, 73 percent of the hogs, and 88 percent of the sheep are listed as being hauled less than 50 miles.

¹Ohio Station Bulletin 440, pages 15-16.

Since information available for the Sioux City market¹ permits a broader view of the field, data from Tables 5 to 7 are arranged in as nearly as possible the same form as the Sioux City data and are

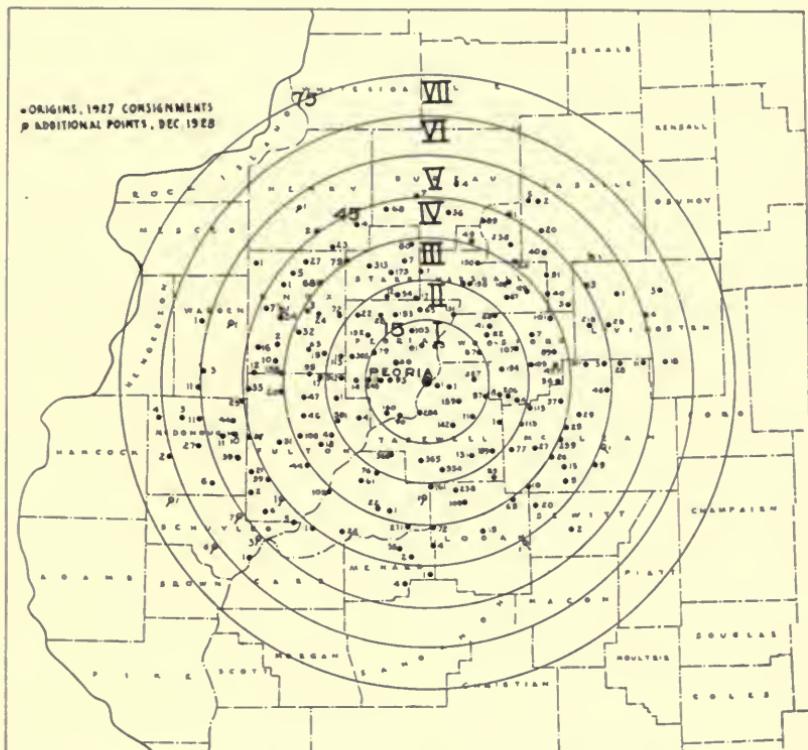


FIG. 12.—ORIGINS OF TRUCK RECEIPTS STUDIED AT PEORIA

Additional shipping points for December, 1928, are not so numerous in the Peoria area as in the East St. Louis area (Fig. 13). Here the truck movement appears to be approaching stabilization. Expansion is to be observed in the southwest portion of the area. Each dot shows original consignments; figures indicate the number of consignments from each point.

included in Table 12.¹ A greater proportion of livestock, it will be noted, was received by truck at Sioux City from within 25 miles than at either East St. Louis or Chicago. This may mean that more livestock is produced near Sioux City than within the same distances of

¹Data furnished thru courtesy of Mr. W. H. Benn, formerly connected with the Sioux City market.

TABLE 12.—PROPORTION OF TRUCK SHIPMENTS ORIGINATING AT VARIOUS DISTANCES FROM THREE ILLINOIS MARKETS AND FROM
SIOUX CITY, IOWA
(Expressed in percentage of all shipments made)

Miles to market ¹	Sioux City, Iowa			Peoria			East St. Louis			Chicago		
	Cattle	Hogs	Total live-stock	Cattle	Hogs	Total live-stock	Cattle	Hogs	Total live-stock	Cattle	Hogs	Total live-stock
Under 25.....	29.2	22.7	22.0	23.5	Under 25.....	48.5	44.2	53.4	45.7	15.2	14.7	9.5
25-50.....	36.9	42.9	30.7	41.2	25-50.....	50.4	55.1	45.8	65.4	67.3	66.5	53.5
50-75.....	18.3	21.9	24.0	21.6	50-75.....	.9	.6	.7	.7	13.8	13.1	22.2
75-100.....	10.4	8.2	11.2	8.7	75-105.....	.....	.....	.....	4.3	4.3	4.7	11.2
100-125.....	3.8	3.4	6.4	3.7	105-125.....	.....	.....	.....	2.2	.5	.1	4.8
125-150.....	.7	.5	2.8	.7	125-150.....	.....	.....	.....	.2	.3	.5	5.6
Over 150.....	.4	...	2.5	.3	Over 150.....	.....	.....	.....	.....	.....	.....	.1

¹Note slight differences between Illinois and Iowa zone intervals.

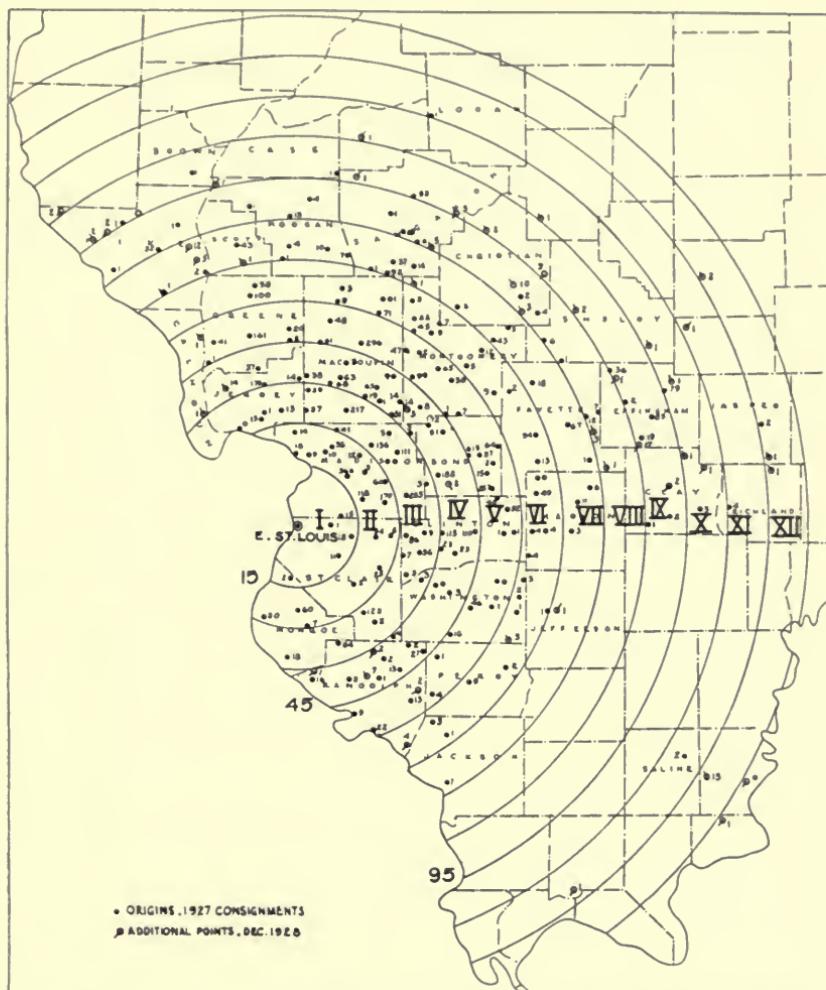


FIG 13.—ORIGINS OF TRUCK RECEIPTS STUDIED AT THE NATIONAL STOCK YARDS,
EAST ST. LOUIS

Expansion in the trucking area around East St. Louis can be observed by comparing the points from which 1927 consignments were received with those from which shipments came in December, 1928. The large numerals at the left of the map (15, 45, and 95) indicate distance from market.

Chicago and East St. Louis. Sioux City apparently draws slightly more long-haul truck business—that is, business from distances of 75 miles and beyond—than the three Illinois markets.

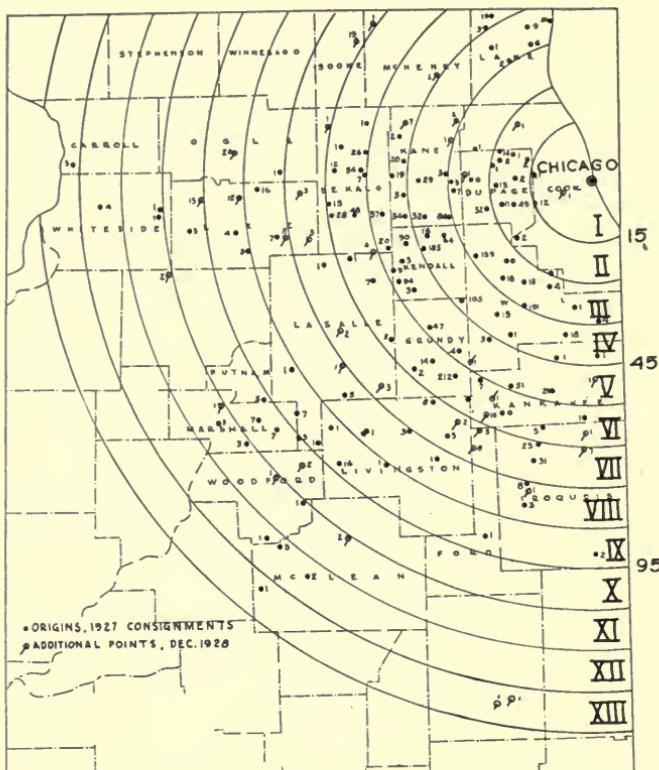


FIG. 14.—ORIGINS OF TRUCK RECEIPTS STUDIED AT THE UNION STOCK YARDS, CHICAGO

Expansion in the Chicago trucking area between 1927 and December, 1928, was about the same in all directions. Heavy traffic in and about Chicago is a disadvantage to livestock truckmen in this area.

CHANGES IN TRUCKAGE RATES

As explained above, the principal data used in this study were from 1927 shipments. But with the rapidly changing economic conditions the situation has altered considerably since 1927. What changes have occurred in livestock truckage rates in the interim? In order to answer that question in part and to bring this presentation as nearly up to date as possible, data covering the month of December, 1928, were obtained from the same firms as before, in like manner, and were treated as has been explained in connection with the 1927 data.

The volume of the shipments included in the December, 1928, study are shown in Table 13 in comparison with the 1927 shipments.

TABLE 13.—NUMBERS OF LIVESTOCK INCLUDED IN THE DECEMBER, 1928, STUDY COMPARED WITH VOLUME INCLUDED IN 1927 STUDY

Zone	Miles to market	Peoria		East St. Louis		Chicago	
		1927	December, 1928 Percent Dec., 1928 was of 1927	1927	December, 1928 Percent Dec., 1928 was of 1927	1927	December, 1928 Percent Dec., 1928 was of 1927
Cattle and calves							
1.	0-15	1,290	154	11.9	36	8	22.2
2.	16-25	2,029	130	6.4	877	10.3	198
3.	26-35	1,906	167	8.7	1,123	12.3	523
4.	36-45	1,256	139	11.0	1,236	20.0	558
5.	46-55	309	24	7.7	2,049	257	307
6.	56-65	67	16	23.8	642	12.5	210
7.	66-75	1	8	800.0	327	25.3	93
8.	76-85	.....	.....	79	88	26.2	69
9.	86-95	.....	.....	134	69	111.3	18
10.	96-105	.....	.....	119	15	51.4	56
11.	106-115	.....	.....	3	3	12.6	30
12.	116-125	.....	.....	.....	10	100.0	6
13.	126-135	.....	.....	.....	.....	.....	3
				.....	.....	.....	5
Hogs							
1.	0-15	11,153	1,462	13.1	85	6	7.0
2.	16-25	28,281	4,906	17.3	1,985	174	8.7
3.	26-35	22,286	4,582	20.5	2,328	305	13.1
4.	36-45	2,731	15,346	17.8	4,174	1,375	32.9
5.	46-55	2,907	1,683	23.5	4,572	1,464	32.0
6.	56-65	496	143	28.8	1,486	1,519	102.2
7.	66-75	107	241	225.2	706	1,096	1,55.2
8.	76-85	.....	.....	.....	646	1,007	155.8
9.	86-95	.....	.....	.....	443	608	137.2
10.	96-105	.....	.....	.....	91	84	92.3
11.	106-115	.....	.....	.....	43	21	48.8
12.	116-125	.....	.....	.....	.....	92	21
13.	126-135	.....	.....	.....	.....	49	14
14.	136-145	.....	.....	.....	.....	.....	20
				.....	.....	.....	49

(Table is concluded on next page)

TABLE 13.—*Concluded*

Zone	Miles to market	Peoria		East St. Louis		Percent Dec., 1928 was of 1927	Percent Dec., 1928 was of 1927	Percent Dec., 1928 was of 1927	Percent Dec., 1928 was of 1927
		1927	December, 1928	1927	December, 1928				
Sheep									
1.	0-15	303	9	12.4	4.1	.....	.....	44	.....
2.	16-25	274	34	2.5	174	.....	.....	262	.....
3.	26-35	194	5	.....	229	.....	4.6	1 013	8.9
4.	36-45	126	2	.....	431	20	7.2	261	29.0
5.	46-55	14	.....	.....	1 302	95	17.1	503	811
6.	56-65	9	1	.....	356	61	.....	88	135
7.	66-75	.....	.....	.....	282	.....	.....	105	153.4
8.	76-85	.....	.....	.....	243	28	11.5	234	266
9.	86-95	.....	.....	.....	151	.....	.....	229	253.3
0.	96-105	.....	.....	.....	.....	4	.....	189	97.8
1.	106-115	.....	.....	.....	.....	.....	.....	10	5.2
2.	116-125	.....	.....	.....	.....	.....	.....	164	11.5
3.	126-135	.....	.....	.....	.....	.....	2	146	.....
4.	136-145	.....	.....	.....	.....	.....	1	146	12

TABLE 14.—LIVESTOCK TRUCKAGE RATES FOR DECEMBER, 1928, COMPARED WITH RATES FOR THE YEAR 1927 IN THREE ILLINOIS MARKET AREAS

Zone	Miles to market	Peoria			East St. Louis			Chicago		
		1927 rate	Dec. 1928 rate	Per-cent decrease 1928	1927 rate	Dec. 1928 rate	Per-cent decrease 1928	1927 rate	Dec. 1928 rate	Per-cent decrease 1928
Cattle and calves										
1	0-15	31.9	30.5	1.4	4.38	43.5	42.9	25.0	36.1	11.2
2	16-25	38.2	36.8	1.4	3.66	47.1	44.6	2.5	5.31	24.9
3	26-35	43.8	41.0	2.8	6.39	51.8	46.8	5.0	9.65	26.2
4	36-45	48.7	43.7	5.0	10.27	52.4	51.4	1.0	1.91	28.1
5	46-55	50.2	48.2	2.0	3.98	55.0	57.6	(2.6)	(4.73)	36.1
6	56-65	53.3	47.2	6.1	11.44	67.1	55.6	11.3	16.84	46.9
7	66-75	50.0	39.4	10.6	21.20	65.5	52.4	13.1	20.00	45.6
8	76-85	.....	.....	.....	.....	65.5	49.3	16.2	24.73	44.5
9	86-95	.....	.....	.....	.....	61.8	49.4	12.4	20.06	63.7
0	96-105	.....	.....	.....	.....	61.7	50.0	11.7	18.96	54.6
1	106-115	.....	.....	.....	.....	74.9	90.0	(15.1)	(20.16)	47.8
2	116-125	.....	.....	.....	.....	74.9	89.5	.....	97.8	61.4
3	126-135	.....	.....	.....	.....	.....	.....	.....	102.7	13.6
4	136-145	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hogs										
1	0-15	26.6	25.6	1.0	3.76	33.7	40.0	(6.3)	(18.60)	32.0
2	16-25	33.0	29.3	3.7	11.21	40.7	38.7	2.0	4.91	24.5
3	26-35	40.2	35.6	4.6	11.44	48.4	42.2	6.2	12.81	34.2
4	36-45	45.8	40.0	5.8	12.65	45.7	36.8	8.9	19.47	30.5
5	46-55	46.6	41.6	5.0	10.73	51.7	44.9	6.8	13.15	33.2
6	56-65	49.0	38.9	10.5	21.43	52.6	46.7	5.9	11.22	44.3
7	66-75	56.5	33.4	23.1	40.49	59.3	41.3	18.0	30.35	45.1
8	76-85	.....	.....	.....	.....	53.6	44.3	10.6	57.3	46.3
9	86-95	.....	.....	.....	.....	51.8	44.3	7.5	14.48	53.0
0	96-105	.....	.....	.....	.....	58.6	55.9	2.7	4.61	64.4
1	106-115	.....	.....	.....	.....	77.2	63.4	13.8	17.88	56.5
2	116-125	.....	.....	.....	.....	.....	.....	.....	60.2	10.2
3	126-135	.....	.....	.....	.....	.....	.....	.....	50.0	10.2
4	136-145	.....	.....	.....	.....	.....	.....	.....	50.0	10.2

¹Figures in parentheses represent an increase rather than a decrease.

TABLE 14.—*Concluded*

Zone	Miles to market	Peoria			East St. Louis			Chicago		
		1927 rate	Dec. 1928 rate	Per-cent decrease 1928	1927 rate	Dec. 1928 rate	Per-cent decrease 1928	1927 rate	Dec. 1928 rate	Per-cent decrease 1928
Sheep										
1	0-15	37.6	39.9	(2.3)	(6.12)	52.9	...	...	35.0	...
2	16-25	43.7	33.2	10.5	24.02	63.0	...	...	32.5	...
3	26-35	46.2	48.4	(2.2)	(4.76)	60.8	45.9	22.3	32.9	32.2
4	36-45	57.8	50.0	7.8	13.49	68.2	45.9	32.70	32.9	32.7
5	46-55	76.4	43.5	(2.1)	(5.07)	62.2	53.3	14.31	31.1	6.7
6	56-65	41.4	...	...	...	66.5	53.9	12.6	18.95	37.8
7	66-75	...	...	...	...	69.4	57.3	17.4	23.29	40.2
8	76-85	...	...	...	...	74.7	57.3	...	72.8	33.2
9	86-95	...	...	...	...	76.6	65.0	...	50.7	49.0
10	96-105	...	...	...	...	...	...	...	54.1	(40.00)
11	106-115	...	...	...	...	...	...	...	41.1	30.36
12	116-125	...	...	...	...	75.0	75.0	...	54.2	43.17
13	126-135	...	...	...	...	74.4	74.4	...	51.1	43.17
								114.2	114.2	12.11
								129.6	129.6	12.11
								141.2	141.2	12.11

¹Figures in parentheses represent an increase rather than a decrease.

The cattle truck receipts studied at Peoria in December, 1928, were 6 to 23 percent as large as those included in the 1927 study from corresponding zones; at East St. Louis the December receipts were 10 to 100 percent as large; at Chicago, they were 2 to 311 percent. Similar comparisons for hogs and for sheep at each of the three markets are shown in the table. The data for the more distant zones may have little significance, since only a small number of long hauls were made, but they are included for what light they may throw on the situation.

Truckage rates on cattle and calves at Peoria were lower in December, 1928, than for the year 1927, by 4 to 21 percent (Table 14). At East St. Louis there were 2 increases and 9 decreases during the later period as compared with the earlier; at Chicago 3 increases and 6 decreases. Rate changes for hogs and sheep at Chicago totaled 5 increases in December, 1928, and 15 decreases. Thus a downward tendency in truckage rates on livestock is indicated by the 1928 data.

Too much reliance, however, should not be placed upon the above figures because of the comparatively few consignments made in the one month's time. Furthermore, under present unstable conditions in the trucking field any data on livestock truckage rates are but indicative of trend, with no assurance that they will apply for any given length of time. The instability of rates is illustrated by their lack of uniformity in areas equidistant from a market. For example, in one area some 50 to 60 miles from Chicago truckage rates in May, 1929, were uniformly 50 cents a hundredweight; during the same period, in two other areas about 60 miles out, the going rates were 25 to 30 cents a hundredweight and at times even so low as 20 cents. One area about 90 miles from Chicago was paying 60 cents a hundredweight, while another region the same distance away was paying only 45 cents. One operator stated that whereas rates formerly were about one cent per mile per hundredweight, truck-rate wars had reduced charges in some sections to such an extent that truckmen were hauling as far as 150 miles at a 50-cent rate.

OTHER FACTORS IN MARKETING EXPENSE¹

Altho transportation charges represent the major expense in marketing livestock, yet a study of marketing costs is not complete without consideration of other factors which modify directly the final transportation expense. In any comparison of the expense of truck and rail marketing the following items must be considered: (1) comparative risk; (2) terminal differentials in yardage and in commissions; (3) comparative shrinkage; (4) on some markets the attitude

¹The reader is referred to Circular 331 of this Station, "Livestock Trucking by Illinois Shipping Associations," pages 22 to 27, for further discussion of the points included here.

of buyers toward truck and rail shipments; and (5) convenience which tho not directly measurable in terms of expense, must be recognized as a very important factor in determining type of shipment used.

Risk. Only recently has the extent of the loss incurred on livestock shipped by truck been studied. The Clay County Shippers Association, shipping livestock both by truck and by rail, found their losses in 1927 to be almost as high on truck shipments as on rail.¹ The data in Table 15 show a higher proportion of dead cattle in truck receipts than in rail at three markets out of five irrespective of length of haul; a higher proportion of dead calves in rail receipts at four markets out of five; and a higher proportion of dead hogs in truck receipts at three markets out of five. Comparative losses in sheep were very similar. Regarding the accuracy of the count of deads and cripples as shown in the truck receipts, it is the opinion of one of the best informed men at one of the leading markets that the numbers are larger than actually appear on the records.

Inquiry is frequent as to comparative livestock losses in truck and rail shipments on the basis of equivalent mileage. Losses checked in this way at two markets during July, 1929, gave the following data.²

LOSSES ON SHIPMENTS OF 100 MILES OR LESS

<i>Truck Hogs</i>		Number received	Number dead	Ratio
Market 1.....		132,747	174	1:763
Market 2.....		137,871	145	1:951
<i>Rail Hogs</i>				
Market 1.....		43,318	15	1:2,888
Market 2.....		31,202	9	1:3,467

A comparison of insurance rates applying to livestock shipped by truck and by rail can be obtained readily for any market where the Hartford Insurance Company furnishes livestock coverage. The rates in effect at several terminal markets are shown in Table 16. In comparing the rail and truck rates in this table, the reader should bear in mind the fact that the insurance company recovers from the railroad companies for a certain proportion of its rail losses, shippers receiving full payment from the insurance company and assigning to it any claims they may have against the carriers. There is no similar

¹See Circular 331, page 12.

²Data obtained thru courtesy of Dr. W. J. Embree, Chief Veterinarian, Western Weighing and Inspection Bureau, Chicago.

TABLE 15.—PROPORTION OF DEAD STOCK IN RAIL AND TRUCK SHIPMENTS AS RECEIVED AT FIVE U. S. MARKETS¹
(Stated in proportion of 1 dead to total number received in sound condition)

Market	Length of period in 1929	Dead cattle		Dead calves		Dead hogs		Dead sheep	
		Rail	Truck	Rail	Truck	Rail	Truck	Rail	Truck
Omaha, Neb.	4 months	5 222	1 849	601	1 744	1 972	719	1 080	1 752
St. Joseph, Mo.	4 months	4 465	2 810	196	1 744	2 740	784	1 479	1 701
Deaver, Colo.	3 months	3 945	14 525	699	2 296	2 065	1 167	807	830
Kansas City, Mo.	2 months	2 889	5 805	256	9 220	1 035	1 386	1 073	1 166
East St. Louis, Ill.	12 months	671	7 491	475	19 002	980	830	562	367

¹From unpublished information from the Western Weighing and Inspection Bureau, Chicago, furnished by courtesy of Dr. W. J. Embree, Chief Veterinarian.

recovery on losses by truck. Several states, however, now require commercial truckmen to provide insurance on all their cargoes, nine states being listed thus far as having such requirements.

Terminal Differentials. At most terminal markets somewhat higher yardage and commission rates are charged on truck consignments than on rail. Such differentials at the three Illinois markets covered in this study range from as low as 2 cents to as high as 20 cents a head.¹ The rapid increase in truck shipments has brought

TABLE 16.—SAMPLE SCHEDULE OF INSURANCE RATES¹ COVERING LOSSES FROM DEATH AND CRIPPLING OF LIVESTOCK IN TRANSIT FROM ANY CAUSE
(The rail rates quoted are general; truckage rates as listed apply at several markets but not at all)

Miles to market	Rail rates, cents per head			Miles to market	Truck rates, cents per head		
	Cattle and calves	Hogs	Sheep		Cattle and calves	Hogs	Sheep
Under 150...	10	7	4	Under 50...	12	8	6
151-300....	12	9	4	50-75.....	15	10	7
351-750....	15	11	5	75-100.....	18	12	9
751-1100....	20	15	6	100-125.....	20	16	11
				125-175.....	22	18	12
				175-225.....	24	19	13
				225-250.....	25	20	14

¹Used with permission of Hartford Insurance Company, Livestock Department.

problems to stockyard managements often entailing heavy expenditures for rearrangement of existing facilities or for new construction. An example of new construction is seen in the new truck unloading docks at the South St. Paul Union Stock Yards (Fig. 15). Whether such expenditures will result in further increases in terminal charges on truck consignments is a question.

Shrinkage. The data so far available show little difference in shrinkage on hogs marketed by truck or shipped by rail. Farm weights, of course, are necessary in both cases, if a correct comparison is to be made between the two methods.²

Attitude of Buyers. Apparently there is less objection now than formerly on the part of most buyers to trucked-in livestock. Yet it is a question that may come up again. The following statement is quoted from page 18 of *The Monthly Record, Packers and Stockyards Administration*, U. S. Department of Agriculture, for March, 1926:

"On account of the extent to which hogs are subject to superficial and deep-seated bruising thru being transported to market in trucks with cattle

¹See Circular 331, Table 2, page 24.

²Shrinkage is discussed in Circular 331, page 25, and in the Forty-Second Annual Report of this Station, page 103.

without being separated by a partition, an effort is being made by one of the large packers at one of the markets to penalize such hogs by subjecting them to a discount of not less than 25 cents per hundredweight. Killing tests are now being conducted to determine whether this discrimination is justified."

Convenience. Livestock trucking makes its strongest appeal to the stockman because of its convenience and because of the greater flexibility of movement permitted. Since the value to be placed on convenience is largely a matter of individual judgment, it cannot readily be measured in dollars. One may, however, total all factors that are measurable in dollars and then set off the net difference against convenience. On the basis of the data shown in Tables 17 and 18, one might charge to convenience amounts as high as \$4.00 a head in one instance on cattle and calves; 93 cents a head in one instance on hogs; and 75 cents a head on sheep. On the other hand,



FIG. 15.—NEW TRUCK UNLOADING DOCKS AT THE UNION STOCK YARDS
IN SOUTH ST. PAUL

Only by noting the number of trucks included in this view can one appreciate the size and capacity of the docks here illustrated. Unloading from trucks is greatly facilitated by construction such as this. New divisions at several terminal markets have become necessary because of the increasing number of livestock received by truck.

actual savings are shown on cattle and calves trucked from the first four zones to Chicago and on hogs trucked from the second zone to Chicago.

COMPARISON OF NET MARKETING EXPENSE BY TRUCK AND BY RAIL

Only when all factors are put on the same basis can satisfactory comparison be made between the expense of marketing livestock by truck and marketing by rail. In order to put all factors on the same basis certain assumptions become necessary and accordingly are used in this phase of the study. It is assumed: (1) that as an alternative to trucking, all livestock might have been shipped by rail in straight

TABLE 17.—APPARENT NET SAVINGS IN MARKETING LIVESTOCK BY RAIL INSTEAD OF BY TRUCK, THREE ILLINOIS MARKET AREAS, 1927¹
(Cents per hundredweight and per head)

Zone	Peoria				East St. Louis				Chicago			
	Cattle and calves		Hogs		Sheep		Cattle and calves		Hogs		Sheep	
	Per ewt.	Per head	Per ewt.	Per head	Per ewt.	Per head	Per ewt.	Per head	Per ewt.	Per head	Per ewt.	Per head
1	5.6	28.7	5.0	11.8	13.3	11.8	15.5	80.5	8.6	21.2	29.3	19.6
2	10.8	55.8	9.4	22.5	22.7	16.6	18.5	93.5	15.1	31.4	39.2	30.3
3	14.3	69.3	14.0	35.9	16.1	17.5	22.2	46.7	35.6	29.8	-5.0	-44.7
4	18.3	93.9	19.2	45.3	26.9	21.5	105.4	17.8	38.6	41.0	-3.2	-32.6
5	20.0	111.9	19.2	45.7	44.9	44.9	23.3	92.2	22.2	45.3	33.7	26.2
6	21.8	120.3	20.8	47.2	47.2	6.8	33.4	110.2	22.2	45.6	36.3	28.5
7	17.9	32.2	28.3	73.0	...	...	31.2	140.6	28.4	57.0	39.7	35.6
8	...	...	...	...	...	...	31.2	126.5	21.0	44.2	42.4	33.1
9	...	...	...	...	...	...	23.2	104.4	17.2	34.4	44.7	32.0
10	...	...	...	...	...	...	27.3	177.8	27.7	56.9	...	...
11	...	...	...	...	...	...	38.7	257.3	44.7	93.1	40.8	25.1
12	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...

¹Based on 1927 truckage rates, with adjustments as described on pages 149 to 162 in the text and in Appendix A.

TABLE 16.—AMOUNTS BY WHICH EXPENSE OF MARKETING BY TRUCK EXCEEDED RAIL EXPENSE, TOTALLED BY ZONES AND BY MARKETS, 1927, FOR VOLUMES OF LIVESTOCK INCLUDED IN THE STUDY

Zone	Peoria			East St. Louis			Chicago			Grand total			
	Cattle and calves	Hogs	Sheep	Total	Cattle and calves	Hogs	Sheep	Total	Cattle and calves	Hogs	Sheep	Total	
1.	\$ 370.83	\$ 313.97	\$ 35.70	\$ 1 720.50	\$ 28.99	\$ 18.03	\$ 55.05	\$ 7.26	\$ 5.40	\$ 3.68	\$ 1.82	\$ 1 777.37	
2.	1 311.28	6 352.44	43.18	7 526.07	819.98	622.54	52.76	-88.50	-12.36	13.24	-87.72	8 934.46	
3.	1 320.30	8 009.46	33.91	9 363.67	1 337.82	1 086.47	68.28	2 492.57	442.16	52.26	234.37	12 090.61	
4.	1 179.07	6 958.31	36.10	8 173.48	1 363.20	1 611.37	128.85	3 044.62	191.67	180.56	54.71	11 272.81	
5.	345.84	1 801.29	6.29	1 681.33	1 890.20	2 069.76	340.94	4 300.91	185.99	297.91	621.84	5 604.68	
6.	80.71	234.31	.39	707.61	707.61	1 486.91	233.61	868.53	4.34	1 106.48	2 098.68	2 908.68	
7.	7.32	78.08	78.40	450.81	402.63	100.38	982.15	82.15	38.24	315.36	1 356.71	1 356.71	
8.	.....	.....	.....	99.05	285.64	80.52	661.11	29.50	120.13	113.77	279.48	462.37
9.	.....	.....	.....	130.88	152.32	48.32	340.52	28.22	107.35	82.14	622.66	622.66
10.	.....	.....	.....	211.55	51.77	.....	263.32	47.77	69.57	65.67	135.24	398.56
11.	.....	.....	.....	7.72	40.05	.....	47.77	24.94	16.90	9.81	137.65	185.42
12.	.....	.....	.....	.....	.....	.....	9.79	2.88	30.53	9.09	51.50	61.29
13.	.....	.....	.....	.....	.....	.....	.....	4.30	4.87	9.77	9.77	9.77
Total.....	\$ 428.23	\$ 224.275.79	\$ 155.57	\$ 228 859.59	\$ 37 006.71	\$ 37 018.48	\$ 40.47	\$ 14 905.66	\$ 44.61	\$ 2 376.32	\$ 705.60	\$ 3 126.53	\$ 46 951.73

carloads¹ thru a cooperative livestock shipping association, truck-in service being available from farm feedlot to railroad loading point if desired; (2) that shipping association home expense, including sinking fund coverage, would be 10 cents per hundredweight of livestock shipped; (3) that local truckage from farm to railroad loading point would be available at a flat rate of 10 cents a hundredweight. Successful commercial truckmen have asserted that they could organize an efficient local truck-in service for an average rate of less than 10 cents if assured a reasonable volume of livestock. One large and very successful association arranges for local truck-in service on most of the livestock it handles and finds the cost of such local service to be about one cent per mile per hundredweight of livestock.

In addition to transportation expense shippers to a terminal market pay yardage,² feed when used, and commission.³ In this study no account is taken of feed, since data concerning it were not available. Yardage and commission are considered only to the extent of differences existing in December, 1928, between truck and rail shipments.⁴ Commission rates on rail shipments as applied to mixed cars of plural ownership are used because they were, and are, the highest rates in effect on rail receipts, thus giving trucks the full benefit of any variations in rates. The methods of computing these various factors are explained in Appendix A.

Shrinkage is often considered an item of marketing expense, but for two reasons it is omitted here: first, because it varies greatly as between similar shipments; and second, because records thus far obtained show similar shrinkage on truck and rail shipments, as pointed out above.

Practices vary regarding risk coverage on livestock shipped by truck, but as full risk coverage by rail is included in the 10-cent shipping association home expense, truck insurance is properly added as a truckage expense and is charged on the basis of rates in effect at the respective markets in the fall of 1928.⁵ In this connection it is significant that of 84 truckmen hauling livestock to Chicago in December, 1928, and carrying commercial livestock transit coverage, 83 passed all the insurance charge directly to the shippers.

¹On page 156 the net marketing expense of marketing by truck is compared with rail on the basis of mixed cars of hogs and cattle.

²See Ohio Station Bulletin 440, pages 24 and 25.

³Assessment of the above charges at terminal livestock markets is advanced by some as a sufficient argument for adoption of direct marketing. While direct marketing should afford certain economies, in the writer's opinion it has not yet been put on a basis that furnishes adequate protection to the interests of livestock producers or assures them a fair share of the savings that may and should result.

⁴See Illinois Circular 331, page 24.

⁵It is reported that truck insurance rates have recently been reduced somewhat on hogs but increased on cattle and sheep, at one market.

Differences Per Head and Per Hundredweight. The net differences in expense between marketing by rail and by truck in three areas studied, assuming that each species of livestock could have moved by rail in straight cars and at the freight rate applicable to that class of livestock, are given in Table 17. To obtain the net expense by rail, 10 cents a hundredweight for shipping association home expense was added to the freight rate and another 10 cents for trucking from farm to railroad station. (In addition at Chicago, a terminal charge per car had to be added, as explained in Appendix A). To obtain the net expense by truck to a particular market, an amount equal to the higher yardage and commission on truck-ins at that market was added to the truck rate, and also the expense of truck insurance per hundredweight (see Appendix A). Thus we have figures giving comparable marketing expense all the way from the farm to the market, and the difference between these totals shows the net difference per hundredweight between the two methods. The following example, showing the way in which truck and rail expenses from Zone 1 to East St. Louis, were figured, illustrates further the way in which net differences were obtained.

<i>Cost of trucking</i>	<i>Cents per cwt.</i>
Average truckage charge from Zone 1.....	43.5
Higher yardage and commission.....	1.7
Transit insurance by truck.....	2.4
	47.6
<i>Cost of rail shipment</i>	
Rail freight charge.....	12.1
Local truckage charge, farm to loading point.....	10.0
Local shipping association home expense, including loss coverage.....	10.0
	32.1
Net difference.....	15.5

It will be noted from Table 17 that shippers saved money by trucking cattle to Chicago from as far as 45 miles (Zone 4), and that hogs were marketed from Zone 2, a distance of 25 miles, more cheaply by truck than by rail.

Apparent Net Savings by Rail. A total net saving of \$46,951.78 (Table 18) would apparently have been possible on the number and weight of livestock included in this analysis if all the stock had been marketed in straight carloads by rail and 10 cents a hundredweight had been charged for local shipping association home expense and 10 cents a hundredweight for trucking from farm feedlot to local railroad loading point. Since this study covers a total of 136,307 head of livestock (Table 3), the apparent possible saving would have been 34.4 cents a head.

Taking into consideration all varying factors, such as higher terminal charges by truck and shipping association expense on shipments by rail, what was the relation between the expense of marketing by truck and the expense of marketing by rail?

This is shown in Table 19 and is ascertained by dividing the net marketing expense by truck by the net marketing expense by rail.

TABLE 19.—RATIO BETWEEN EXPENSE OF MARKETING LIVESTOCK BY RAIL AND BY TRUCK, PER HUNDREDWEIGHT, IN THREE ILLINOIS MARKET AREAS
(All items of expense except shrinkage and feed at the market taken into account.
Expense by rail = 1)

Zone	Cattle and calves			Hogs			Sheep		
	Peoria	East St. Louis	Chicago	Peoria	East St. Louis	Chicago	Peoria	East St. Louis	Chicago
	<i>1 to:</i>	<i>1 to:</i>	<i>1 to:</i>	<i>1 to:</i>	<i>1 to:</i>	<i>1 to:</i>	<i>1 to:</i>	<i>1 to:</i>	<i>1 to:</i>
1.....	1.18	1.48	.88	1.16	1.25	1.20	1.41	1.90	...
2.....	1.33	1.57	.84	1.28	1.44	.96	1.47	2.20	1.28
3.....	1.42	1.68	.85	1.42	1.63	1.16	1.42	2.04	1.16
4.....	1.52	1.61	.90	1.52	1.48	1.04	1.69	2.14	1.13
5.....	1.57	1.65	1.20	1.51	1.58	1.09	2.13	1.90	1.21
6.....	1.59	1.87	1.37	1.53	1.55	1.35	1.15	1.90	1.26
7.....	1.48	1.80	1.29	1.72	1.69	1.34	...	2.00	1.11
8.....	...	1.79	1.57	...	1.48	1.61	...	1.94	1.96
9.....	...	1.53	1.54	...	1.37	1.41	...	2.00	2.36
10.....	...	1.69	...	...	1.65	1.78	...	...	2.25
11.....	...	1.92	2.04	...	2.00	2.04	...	...	2.00
12.....	...	...	2.64	...	...	1.51	...	...	2.88
13.....	...	...	2.73	...	...	1.40	...	...	3.12

For example, the net trucking expense on cattle and calves from Zone 1 to East St. Louis, 47.6, divided by 32.1, the rail expense, equals 1.48. Thus the trucking expense in this case is 1.48 times the rail expense. The ratio of truck expense to rail is shown graphically in Fig. 16, the expense of marketing cattle, hogs, and sheep by truck at each of the three markets studied being plotted against the expense of marketing these species by rail.

Illinois stockmen in 1927 trucked 1,115,606 head of livestock to the three markets, Peoria, East St. Louis, and Chicago (Table 3). If it may be assumed that the consignments included in this study are representative of the total truck receipts at each market, then it is permissible to apply the above ratios to this total number. On such a basis the possible total savings to Illinois stockmen in marketing by rail instead of by truck would have been \$400,763. The saving to each individual might not mean a great deal, but to the livestock industry of the state a saving of \$400,000, or even of half that amount, is worth while. Obviously, possible savings would have varied widely according to localities and to conditions. As shown by Table 17, stockmen tributary to Chicago could market cattle more cheaply by truck than by rail from the first four zones (45 miles). On cattle and calves sent to East St. Louis the possible saving by rail over

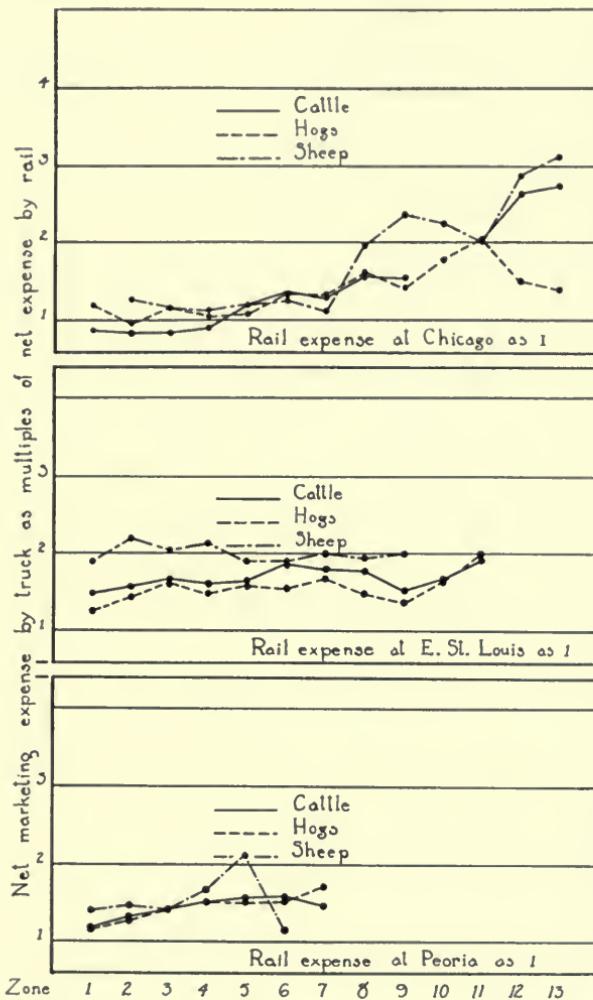


FIG. 16.—COMPARATIVE NET EXPENSE OF MARKETING LIVESTOCK BY TRUCK AND BY RAIL

Where net marketing expense by truck is the same as by rail the dot indicating expense by truck would appear on line 1 in the above chart. The net marketing expense on hogs trucked to Chicago from Zone 2 is shown in Table 19 as .96 of the expense by rail; note that it is shown in the above chart as just below line 1. The net expense of trucking cattle to Chicago from Zones 1 to 4 is shown in Table 19 as less than shipping by rail. In all these zones it is therefore indicated by dots below line 1. On the other hand, for sheep from Zone 13 to Chicago the net expense by truck was 3.12 times that by rail and is indicated by a dot just above line 3; while for hogs from Zone 11 to East St. Louis the net expense by truck was exactly twice that by rail and is plotted directly on line 2.

truck would apparently have ranged from \$1 to \$2 a head for eight out of the eleven zones represented.

The preceding paragraph suggests that marketing problems may be viewed from the standpoint of individual savings or of savings to the industry. In the livestock field the industry conception has heretofore received insufficient emphasis. Fortunately it is becoming

TABLE 20.—GROSS DIFFERENCES BETWEEN TRUCK AND RAIL RATES WHEN SUBSTITUTING HOG FREIGHT RATES FOR CATTLE FREIGHT RATES
(Cents per hundredweight)

Zone	Peoria			East St. Louis			Chicago		
	Difference using cattle rates	Difference using hog rates	Reduction in difference using hog rates ¹	Difference using cattle rates	Difference using hog rates	Reduction in difference using hog rates ¹	Difference using cattle rates	Difference using hog rates	Reduction in difference using hog rates ¹
1.....	20.7	19.8	.9	31.4	29.3	2.1	15.0	13.5	1.5
2.....	25.9	24.1	1.8	34.4	32.4	2.0	14.9	12.9	2.0
3.....	29.4	28.0	1.4	38.6	36.5	2.1	13.9	11.7	2.2
4.....	33.4	31.6	1.8	37.4	35.4	2.0	15.7	13.0	2.7
5.....	35.1	32.3	2.8	39.2	36.4	2.8	25.8	23.3	2.5
6.....	36.4	33.8	2.6	48.8	46.6	2.2	31.9	29.4	2.5
7.....	32.5	30.5	2.0	46.6	44.5	2.1	29.3	27.1	2.2
8.....	.....	.....	.....	46.0	41.4	4.6	40.1	36.9	3.2
9.....	.....	.....	.....	38.0	35.7	2.3	41.7	40.7	1.0
10.....	.....	.....	.....	42.1	39.3	2.8	.....	.....	.....
11.....	.....	.....	.....	53.0	50.4	2.6	.....	.....	.....
12.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

¹The difference in expense in favor of rail marketing is reduced by this amount when the hog freight rate is applied.

better understood that what is beneficial to the industry in the long run is usually beneficial to the individuals engaged therein.

Applying Hog Freight Rates to Both Hogs and Cattle. Returning to the question of differentials, the fact that small associations ship few straight loads of cattle must be taken into consideration. Their cattle come a few at a time and usually must be mixed in with hogs. A fairer basis, therefore, of calculating net differences in the expense of shipping by truck and by rail is to apply hog freight rates to both hogs and cattle. Sheep are omitted from this phase of the study because from very few points can they be shipped with cattle or hogs without increasing materially the freight rate per hundredweight.

Gross differences per hundredweight when hog freight rates are substituted for cattle freight rates are shown in Table 20, differences computed on the cattle freight basis being brought here from Table 9 for convenience in comparison. The differences between rail and truck rates are reduced on cattle in general about 2 cents a hundredweight by applying the hog rate to all cattle and calf shipments. The results of applying hog freight rates to all shipments of cattle, calves, and

hogs included in this study are shown in Table 21. On the hog freight-rate basis the total net savings that would have resulted from using rail instead of truck are somewhat reduced, being \$43,471 against \$45,150, the total of the figures for cattle and hogs shown in Table 18.

Effect of Decline in Truckage Rates. But, as shown on pages 140 to 145, truckage rates have tended to decline since 1927. On the basis of average truckage rates apparently in effect in December, 1928, the total net differential in favor of rail shipment becomes for the three markets \$34,016.04 (Table 22) as against \$46,951.78 (Table 18), an apparent reduction of \$12,935.74. Dividing \$34,016.04 by the number of head included in this study (136,307), the apparent possible saving per head becomes 24.9 cents instead of 34.4 as above.

Suppose the total net difference between rail and truck expense be calculated for all livestock sent by Illinois stockmen in 1927 to the three markets here considered, as was done on page 154, but using now the December, 1928, rates instead of the 1927 rates. Such a calculation for the entire 1,115,606 head of livestock reduces the apparent total net differential in favor of rail marketing from \$400,763.30, as developed on the basis of 1927 truck rates, to \$243,282.44, or to 21.8 cents a head.

Differences in Rail and Truck Expense on Longer Hauls. The question of the difference in expense when shipping by truck or by rail must be considered from yet another angle. Truck advantages would be expected to be more pronounced on short hauls, differences in favor of rail increasing rapidly as distances lengthen. The first four truckage zones (45 miles or less) are therefore dropped in this phase of the study and the data for truck consignments having a haul of over 45 miles summarized (Table 23).

At East St. Louis the records studied included 13,713 head of livestock trucked from Zone 5 and beyond. This number included 3,353 cattle and calves, 7,987 hogs, and 2,373 sheep. The total combined weight was 3,160,535 pounds. On the basis of 1927 truckage rates the cost of marketing this livestock by truck would appear to have been \$7,878.14 higher than by rail. This is an average difference of 57 cents a head or 25 cents a hundredweight. Applying hog freight rates to the cattle instead of cattle rates, and using the regular sheep rate for sheep, the total higher cost by truck is reduced to \$7,522.61, which is an average of 55 cents a head or 24 cents a hundredweight. Applying truckage rates of December, 1928, the total higher cost by truck, as compared with rail, becomes \$5,986.66, an average of 44 cents a head or 19 cents a hundredweight.

At Chicago this study included 672 cattle and calves, 7,184 hogs, and 3,340 sheep, a total of 11,196 head which were trucked from Zone 5 and beyond. It will be noted that costs by truck, under 1927 rates, were higher than by rail to the extent of 26 cents a head or 11 cents

TABLE 21.—TOTAL AMOUNTS BY WHICH EXPENSE OF MARKETING BY TRUCK EXCEEDED RAIL EXPENSE WHEN HOG FREIGHT RATES ARE APPLIED TO VOLUMES OF CATTLE, CALVES, AND HOGS INCLUDED IN 1927 STUDY

Zone	Peoria		Chicago		East St. Louis		Total
	Cattle and calves	Hogs	Cattle and calves	Hogs	Cattle and calves	Hogs	
1.	\$ 311.23	\$ 1,313.97	\$ -10.05	\$ 5.40	\$ 25.06	\$ 18.03	\$ 1,663.04
2.	942.73	6,352.44	-106.31	-12.36	731.34	622.54	8,530.38
3.	1,189.75	8,009.46	-374.47	442.16	1,214.06	1,086.47	11,507.43
4.	1,063.10	6,958.31	-353.39	180.56	1,181.97	1,611.57	10,642.12
5.	297.42	1,329.22	118.60	299.71	1,663.05	2,069.76	5,777.76
6.	70.98	234.31	189.70	808.53	661.00	677.70	2,702.22
7.	.29	78.08	65.26	194.97	428.80	402.63	1,170.09
8.	.....	.....	25.17	120.13	85.21	285.64	516.15
9.	.....	.....	27.01	146.35	126.02	152.32	451.70
10.	.....	.....	.....	69.57	189.85	51.77	311.19
11.	.....	.....	.....	16.90	7.20	40.05	86.90
12.	.....	.....	2.50	39.53	.....	.....	42.03
13.	.....	.....	4.61	4.87	.....	.....	9.48
Total.....	\$3 875.50	\$24 275.79	\$-388.62	\$2 376.32	\$6 313.02	\$7 018.48	\$43 471.09

a hundredweight. Applying hog freight rates to cattle and calves, the differences in favor of rail become 25 cents a head or 10 cents a hundredweight. On the basis of December, 1928, rates, these differences become 15 cents a head or 6 cents a hundredweight. In comparison with these figures the East St. Louis figures given above are over twice as high, indicating much lower savings by rail in the Chicago area than in the East St. Louis area.

At Peoria 377 cattle and calves, 3,510 hogs, and 23 sheep, a total of 3,910 head trucked from Zone 5 and beyond, were included in this study. The differences in shipping expense at this market in favor of rail were but slightly less than those shown for East St. Louis and fully twice as high as are indicated for the Chicago area.

The records for all three markets cover 28,819 head of livestock, a total market weight of 6,868,365 pounds, trucked from Zone 5 and farther. As already suggested, the differences between the expense of truck and rail from distances of 45 miles and farther were much more pronounced in the East St. Louis and Peoria areas than in the Chicago area.

Local Considerations. The foregoing discussion is an attempt to give a picture of the situation as a whole as regards the comparative expense of marketing by truck and by rail in the areas contributing to the three leading Illinois markets. There is no attempt to show in detail the price situation in any given small area, the data being presented on the zone basis only, much as a rainfall map indicates average precipitation for a given area but tells nothing of local floods or drouths within the area. It is apparent that stockmen in these market areas have as a whole paid considerably more for marketing by truck than would have been necessary to market the same amount of livestock by rail even including 10 cents a hundredweight for local shipping association home expense and another 10 cents for local truckage from farm feedlot to local railroad loading point.

Possibly stockmen marketing by truck have perceived other advantages, not adequately measured or presented in this analysis, which they accept as worth the additional expense. Local shipping associations have not been available everywhere, often having succumbed to truck competition. In numerous instances, however, stockmen apparently have not analyzed and compared the expense of the two methods of transportation, often not having at hand the information needed, and have accepted trucking, direct to market, on whatever basis it was presented to them.

TABLE 22.—TOTAL AMOUNTS BY WHICH EXPENSE OF MARKETING BY TRUCK EXCEEDED RAIL EXPENSE WHEN DECEMBER, 1928, TRUCK RATES ARE APPLIED TO VOLUME OF LIVESTOCK INCLUDED IN 1927 STUDY

Zone	Cattle and calves			Hogs			Sheep			Total	
	Difference using 1927 rates		Difference using Dec. 1928 rates	Difference using 1927 rates		Difference using Dec. 1928 rates	Difference using 1927 rates		Difference using Dec. 1928 rates	Difference using 1927 rates	
	Difference using 1927 rates	Difference using Dec. 1928 rates	Difference using 1927 rates	Difference using Dec. 1928 rates	Difference using 1927 rates	Difference using Dec. 1928 rates	Difference using 1927 rates	Difference using Dec. 1928 rates	Difference using 1927 rates	Difference using Dec. 1928 rates	Difference using 1927 rates
Peoria											
1	\$ 370.83	\$ 278.12	\$ 1 313.97	\$ 1 051.18	\$ 35.70	\$ 41.87	\$ 1 720.50	\$ 1 371.17	\$ 1 492.28	\$ 1 371.17	
2	\$ 131.28	\$ 984.63	\$ 6 332.44	\$ 3 822.01	\$ 43.18	\$ 15.87	\$ 526.90	\$ 852.51	\$ 363.57	\$ 635.91	
3	\$ 1 320.30	\$ 1 060.63	\$ 8 009.46	\$ 5 556.74	\$ 33.91	\$ 38.54	\$ 9 363.57	\$ 6 635.91	\$ 173.48	\$ 5738.87	
4	\$ 1 179.07	\$ 856.92	\$ 6 958.31	\$ 4 866.32	\$ 36.10	\$ 25.63	\$ 8 173.48	\$ 5 681.35	\$ 1 300.62	\$ 300.62	
5	\$ 345.84	\$ 311.26	\$ 1 329.22	\$ 983.07	\$ 6.29	\$ 6.29	\$ 1 681.35	\$ 1 315.20	\$ 174.59	\$ 174.59	
6	\$ 80.59	\$ 58.04	\$ 234.31	\$ 14.35	\$.39	\$.52	\$ 78.40	\$ 14.48	\$ 850.59	\$ 808.15	
7	\$ 4 428.23	\$ 3 549.73	\$ 24 275.79	\$ 16 400.70	\$ 155.57	\$ 128.72	\$ 28 850.59	\$ 20 088.15			
East St. Louis											
1	\$ 28.99	\$ 27.87	\$ 18.03	\$ 31.25	\$ 8.03	\$ 8.03	\$ 55.05	\$ 67.15			
2	\$ 819.98	\$ 709.18	\$ 622.54	\$ 540.08	\$ 52.76	\$ 52.76	\$ 1 492.28	\$ 302.02			
3	\$ 1 337.32	\$ 1 043.15	\$ 1 086.47	\$ 783.04	\$ 68.28	\$ 68.28	\$ 2 492.57	\$ 894.47			
4	\$ 1 303.20	\$ 2 142.59	\$ 1 611.59	\$ 805.78	\$ 129.85	\$ 50.22	\$ 3 044.62	\$ 107.50			
5	\$ 809.20	\$ 2 101.12	\$ 2 069.76	\$ 455.78	\$ 340.94	\$ 250.90	\$ 4 300.90	\$ 787.80			
6	\$ 707.61	\$ 677.21	\$ 407.50	\$ 101.60	\$ 66.34	\$ 1 486.34	\$ 1 486.34	\$ 1 032.14			
7	\$ 459.81	\$ 266.73	\$ 402.63	\$ 147.44	\$ 100.38	\$ 962.82	\$ 962.82	\$ 514.57			
8	\$ 99.95	\$ 48.05	\$ 285.64	\$ 141.46	\$ 80.52	\$ 47.48	\$ 466.11	\$ 236.99			
9	\$ 139.88	\$ 65.12	\$ 152.32	\$ 85.90	\$ 48.32	\$ 48.32	\$ 340.52	\$ 199.34			
10	\$ 211.55	\$ 120.88	\$ 51.77	\$ 46.73	\$ 27.60	\$ 27.60	\$ 263.32	\$ 167.61			
11	\$ 7	\$ 10.73	\$ 40.05	\$.77	\$.77	\$.77	\$ 47.77	\$ 38.42			
12	\$ 7 006.71	\$ 6 103.65	\$ 7 018.48	\$ 4 542.74	\$ 9.79	\$ 9.79	\$ 9.79	\$ 9.79	\$ 14 965.66	\$ 11 357.80	
Total				\$ 3040.47					\$ 711.50		

TABLE 22.—Concluded

Zone	Cattle and calves		Hogs		Sheep		Total			
	Difference using 1927 rates	Difference using Dec. 1928 rates	Difference using Dec. 1928 rates		Difference using 1927 rates	Difference using Dec. 1928 rates				
			Difference using 1927 rates							
Chitengo										
1.....	\$ -7.26	\$ -7.26	\$ -4.40	\$ -4.27	.....	.....	\$ -11.53	
2.....	-88.60	109.86	-12.36	6.90	3.68	3.68	-97.28			
3.....	-260.05	322.46	442.16	127.40	13.24	13.24	463.10			
4.....	-191.67	227.60	180.56	90.28	52.26	44.94	195.35			
5.....	185.99	16.17	299.71	352.60	65.82	14.54	41.15			
6.....	233.61	-64.99	808.33	295.80	136.14	47.90	551.32			
7.....	82.15	48.37	194.97	199.27	4.34	17.01	238.28			
8.....	20.50	12.72	120.13	68.31	38.24	18.26	281.46			
9.....	28.22	17.25	146.35	139.91	113.74	39.18	99.29			
10.....	.....	.....	60.57	47.16	107.57	87.13	288.31	
11.....	.....	16.44	16.90	9.47	65.67	112.83	177.14		
12.....	2.88	4.90	30.33	22.39	95.81	93.81	107.51			
13.....	.....	.....	4.87	4.87	9.09	18.86	138.22	
Total.....	\$44.61	\$706.40	\$2 376.32	\$1 359.99	\$705.60	9.09	\$ 3 126.53			
Total for all kinds of livestock.....	.....	.....	.....	.....	.....	.....	\$46 951.78

Total net difference in favor of rail for the three markets, all zones, on basis of 1927 truck rates, \$46,951.78.

Difference on basis of December, 1928, truck rates, \$34,016.04.

Decrease in difference between truck and rail marketing expense on basis of December, 1928, rates, \$12,935.74.

TABLE 23.—AMOUNTS BY WHICH EXPENSE OF MARKETING BY TRUCK EXCEEDED RAIL EXPENSE ON ALL LIVESTOCK HAULED MORE THAN 45 MILES, 1927 STUDY

OTHER ASPECTS OF THE TRUCKING PROBLEM

Transportation, particularly as it involves the matter of making necessary adjustments between motor and rail, is one of the basic questions before the livestock industry today. It is a problem of many phases, of rapid and continuous development, and of great significance.

Stockmen, both individually and collectively, are rightfully giving more consideration to these matters. They are beginning to realize that, depending upon the course of its development, the increasing use of motor transportation may change the entire livestock marketing system. Trucking, for example, may be encouraging the establishment of innumerable small markets at the expense of the present terminals; probably it has accelerated direct marketing; it may tend toward further decentralization of the packing industry; it has impeded operation of local cooperative livestock shipping associations, yet if properly used, it could well contribute to an effective farmer-owned and controlled livestock marketing system. Railroads, it would seem, should be interested in the new transportation problems confronting shippers of livestock, but as yet they appear to have taken little active part in their solution.

Regulation of motor transportation by state or interstate agencies and by standardization of rates and schedules has been widely discussed. The South Dakota Motor Carrier Act, passed March 5, 1925, is one step in that direction. Free and unrestrained competition allows truckmen to demonstrate how cheaply it is possible to operate, but carried to the extreme it may result in demoralization. Another angle of this question of regulation which applies also to truck transportation, was presented by the *Ohio Farmer* editorially in its issue of June 15, 1929, when it said: "The terrific toll of lives taken by busses in Ohio this year brings forcibly to mind the need for some law enforcement agency on the highways of the state."

Assessment of fees against trucks and busses in proportion to their probable wear and tear of the public highways is important to property owners of the state, especially landowners. In the meantime the state permits the use of its hard roads by motor transport companies at rather nominal charges. A state board of one of the corn-belt states is said to have made a careful survey of the truck situation in 1926 as regarded the use of public highways. The investigator reported that the state was losing some \$1,600,000 a year because of insufficient revenue from trucks that were hauling for compensation. It should be mentioned in passing, however, that a given truck wears the highways equally whether operated solely in the owner's business or for hire.

TREND OF TRUCKAGE RATES

Conversations with truckmen indicate a realization on the part of many that rates are now so low in many instances as to preclude satisfactory profit on the present basis of operation. Attempts at voluntary regulation of rates usually have failed because certain individuals fancied they could get more business by remaining outside and cutting the price. A truckman of long experience says: "As a result of this condition many truckmen wear out their trucks and have to quit, but it seems that as fast as one drops out two more buy trucks on a small-payment plan and try to take his place." Many truckmen say that on the basis of current livestock rates their margin of profit is dependent largely upon the development of a back-haul business. In at least one area livestock trucking appears to be stabilizing on that basis and to be concentrating largely in the hands of a few operators.

Obviously further changes in livestock truckage rates will be influenced directly by the degree to which back-haul business is developed for trucks moving livestock to market. The scope of this study did not permit inclusion of this item, which is one of rapidly growing importance. At a recent conference one Illinois farm adviser stated that livestock trucking in his county was now controlled largely by three of the larger outfits that were operating on a strictly business basis and that they had succeeded in developing a regular back-haul business of fair volume. Farmers in increasing numbers mention the convenience and economy of the back-haul service as an important reason for their growing patronage of livestock truckage.

The question is often asked whether the railroads may not enter the livestock-trucking field either by providing local truck-in service to shipping points or by putting on truck service direct to market. Definite developments in those directions have not as yet appeared in the livestock field. However, railroads do use both the motor trucks and the motor bus. The Department of Commerce reported in 1926:¹ "Over fifty railroads in the United States and Canada are now using motor trucks to supplement their shipping service"; in 1927,² "Seventy-two railroads now use trucks to supplement regular shipping service—46 in terminal operations, 15 in the form of store-door delivery, and 11 to replace local freight trains."

Organized trucking by cooperative livestock shipping associations has received increasing attention in the last two years and instances of its success are numerous. It would seem that any agency which can increase the volume handled by a given truck or number of trucks should be able to furnish satisfactory service at minimum expense.

Stockmen are interested in optimum transportation, in service that is rapid, efficient, and economical. Optimum utilization of motor

¹Report of U. S. Secretary of Commerce, June, 1926, p. 48. ²June, 1927, p. 16.

transportation necessarily is included as part of such a system. But optimum utilization does not necessarily mean truckage all the way from farm to market from all distances; often it means a combination of truck and rail.

SUMMARY

This study of truckage rates in Illinois is based on data derived from analysis of more than 39,000 actual accounts sale, covering more than 155,000 head of livestock trucked in to the three Illinois terminal markets, Peoria, East St. Louis, and Chicago, in 1927 and December, 1928.

At Peoria truckage rates in 1927, per hundredweight per mile, averaged 2.8 to 3.5 times the rail rates on cattle and calves, 2.1 to 2.7 times the rail rates on hogs, and 1.7 to 3.7 times the rail rates on sheep.

At East St. Louis they averaged 2.3 to 4.2 times the rail rates on cattle and calves, 2 to 3.5 times the rail rates on hogs, and 3 to 5.3 times the rail rates on sheep.

At Chicago they averaged 2 to 8 times the rail rates on cattle and calves, 2 to 3.5 times the rail rates on hogs, and 1.6 to 4.5 times the rail rates on sheep.

A downward tendency in truckage rates on livestock is indicated by a comparison of 1927 rates with those of December, 1928. Further shifts in rates will depend largely upon the possibility of further reduction of the actual costs of operating trucks and the adoption by truckmen of adequate records of their respective operating costs. Stockmen will not benefit from truckage rates that are too low to support efficient and dependable truck service.

On the basis of the 1927 truckage and freight rates, the apparent net savings possible in marketing livestock by rail instead of by truck would have been 34.4 cents a head. For the 136,307 head included in this study, this would have meant a total saving of \$46,952. On all Illinois livestock trucked to these three markets in 1927 (1,115,606 head), a total of \$400,763 would have been saved by shipping by rail.

In calculating net marketing expense by rail 10 cents a hundredweight was allowed for trucking from farm to market and 10 cents a hundredweight for shipping association home expense.

Applying hog freight rates to all truck consignments of cattle and calves on the assumption that it would have been necessary to ship in mixed loads, the apparent savings on this class of livestock for the number of head included in this study would have been reduced from \$46,952 to \$43,471.

Applying December, 1928 truckage rates instead of 1927 rates would reduce the total apparent saving still further from \$46,952 to

\$34,016, making the saving 24 cents a head instead of 34.4 cents, as above.

The bulk of the truck shipments included in this study moved less than 50 miles. Truck consignments came from greater distances to East St. Louis and Chicago than to Peoria.

Considering only truck shipments moving 45 miles or more, the apparent savings in marketing by rail instead of by truck, figured on the basis of the 1927 truckage and freight rates would have been as follows:

To Peoria—53 cents a head, or 20 cents per cwt.

To East St. Louis—57 cents a head, or 25 cents per cwt.

To Chicago—26 cents a head, or 11 cents per cwt.

On the basis of the December, 1928, truckage rates and 1927 freight rates, the apparent savings would have been:

To Peoria—38 cents a head, or 14 cents per cwt.

To East St. Louis—44 cents a head, or 19 cents per cwt.

To Chicago—15 cents a head, or 6 cents per cwt.

Any comparison of the expense of marketing livestock by truck and by rail should include attention to risk, differences in terminal market charges, shrinkage, buyers' attitudes, and convenience to shipper. With the exception of buyers' attitudes and convenience these factors have been taken into consideration in the foregoing comparisons of net marketing expense. From available data it appears that losses due to death or crippling in truck shipments are as heavy as in rail shipments, and heavier when shipping mileage is considered. More complete information, however, is needed on this subject. Terminal charges (yardage and commission) are higher on truck shipments than on rail at the three markets here considered. Shrinkage is not greatly different on the two methods of shipment, judging by available data. Having allowed for all other factors, the cost of convenience may be measured by the net difference between the cost of two methods of transportation.

Trucking is appealing to more and more stockmen. The number of livestock trucked to the three Illinois markets included in this study increased from 1,726,918 in 1928 to 2,344,416 in 1929, or by 35 percent. Two main reasons for the growing use of this method of transportation appear to be convenience and greater flexibility of movement, since in the majority of cases the actual cost of truckage is materially higher than shipment by rail. The problem of necessary adjustments between truck and rail transportation is a basic one, and a study such as this suggests that the best service is not necessarily truckage all the way from farm to market but that it may be a combination of truck and rail.

APPENDIX A

As pointed out on page 145, the net differences between transportation costs by truck and by rail are affected or modified by several factors, among them risk and terminal marketing expense and, at Chicago, a terminal railway charge per car. In order to ascertain the net difference in cost between marketing by truck and by rail, allowances were necessary for an insurance charge on shipments by truck and for higher terminal market charges. Constant amounts per hundredweight, for each kind of livestock and for each market, were used for these items, the amounts being figured as follows.

Figuring the Higher Terminal Expense on Truck Shipments

Cattle and Calves. Since cattle and calves could not be separated readily in the analysis of the data, it was necessary to secure a representative and fair factor, covering both, as regarded the difference in terminal market charges. Accordingly a sample of 40 towns from each market area was taken from the original data sheets and the total number of calves and total number of cattle in these shipments determined. The combined excess yardage and commission rates assessed per head on truck calves at that market was multiplied by the total number of calves in the shipments. Similarly the excess yardage and commission rates assessed per head on truck cattle at that market were multiplied by the total head of cattle. These sums were then added and the total divided by the combined weight of the calves and cattle. This gave an amount per hundredweight which was applied to all truck consignments to that market. For example, the sample of 40 towns from East St. Louis data sheets worked out as follows:

$$\$0.07 \left(\begin{array}{l} \text{charge per calf for excess yardage and} \\ \text{commission} \end{array} \right) \times 751 \left(\begin{array}{l} \text{number of} \\ \text{calves} \end{array} \right) = \$52.57$$

$$\$0.10 \left(\begin{array}{l} \text{charge per head of cattle for excess} \\ \text{yardage and commission} \end{array} \right) \times 598 \left(\begin{array}{l} \text{number of} \\ \text{cattle} \end{array} \right) = 58.90$$

Total charge for cattle and calves.....\$111.47

$\$111.47 \div 6,416.35$ (number of cwt.) = \$0.017, or cost per hundredweight.

In calculating truck-in costs on cattle and calves at East St. Louis, 1.7 cents per hundredweight was therefore added to truckage rates for each zone.

Hogs. The combined excess yardage and commission charges assessed on truck hogs at a given market was multiplied by the number of head included in the analysis for that market, and the sum divided by the number of hundredweight of hogs in the shipments. This gave a sum per hundredweight which was used as a constant for all hogs trucked-in to that market. For example, at East St. Louis:

$$\frac{\$0.07 \times 16,559 \text{ (hogs)}}{34,596.15 \text{ (cwt.)}} = \$0.034 \text{ per cwt.}$$

Sheep. Sheep were handled in the same way as were hogs. At East St. Louis the figures were:

$$\frac{\$0.02 \times 3,248 \text{ (sheep)}}{2,536.95 \text{ (cwt.)}} = \$0.025 \text{ per cwt.}$$

All Species. Using the methods described above, the amounts added to cover higher terminal market costs on truck receipts were as follows:

	East		
	St. Louis	Peoria	Chicago
	(cents per cwt.)		
On cattle and calves.....	1.7	3.1	1.03
On hogs.....	3.4	7.1	3.9
On sheep.....	2.5	2.1	2.3

Insurance Differential

Truckage insurance charges, as already explained, are figured as a differential because complete loss coverage by rail is covered in the charge of 10 cents per hundredweight deducted for shipping association home expense.

In calculating this item the actual rate, per head, in effect for each zone, at each market, was figured for each kind of livestock. The amounts by zones were totaled and this sum was divided by the total weight of livestock involved in order to put it on a hundred-weight basis. The results obtained, and factors used were as follows:

	East		
	St. Louis	Peoria	Chicago
	(cents per cwt.)		
On cattle and calves			
Under 55 miles ⁴	2.4	3.4	1.3
55 to 75 miles.....	2.9	4.2	1.6
75 to 105 miles.....	3.5	...	1.9
Over 105 miles.....	4.0	...	...
On hogs			
Under 55 miles.....	5.7	1.8	3.9
55 to 75 miles.....	6.7	2.3	4.7
75 to 105 miles.....	8.1	...	5.9
Over 105 miles.....	8.6	...	6.6
On sheep			
Under 55 miles.....	6.4	6.2	9.0
55 to 75 miles.....	7.7	7.3	10.2
75 to 105 miles.....	10.2	...	11.3
Over 105 miles.....	...	...	13.6

⁴The Hartford Insurance Company's truck insurance rates are based on a 50-mile radius for the first zone and 25-mile intervals thereafter. Certain of the above items necessarily included 5 miles of additional territory because of the zoning used in this study.

Terminal Charge at Chicago. At the Chicago Union Stock Yards a terminal charge, usually \$2.70 per car, is made. It was calculated that, on straight loads, allowances of 1.2 cents per hundredweight on cattle and calves, 1.6 cents per hundredweight on hogs, and 2.2 cents per hundredweight on sheep would account for that item. Those amounts were accordingly used on all consignments from all zones in the Chicago area.

APPENDIX B

Livestock Freight Rates in Illinois. Let a layman take a map of Illinois, mark at each town the railroad freight rates in effect to Chicago or to East St. Louis on each kind of livestock and then try to interpret the results in terms of a rate system. He finds it an

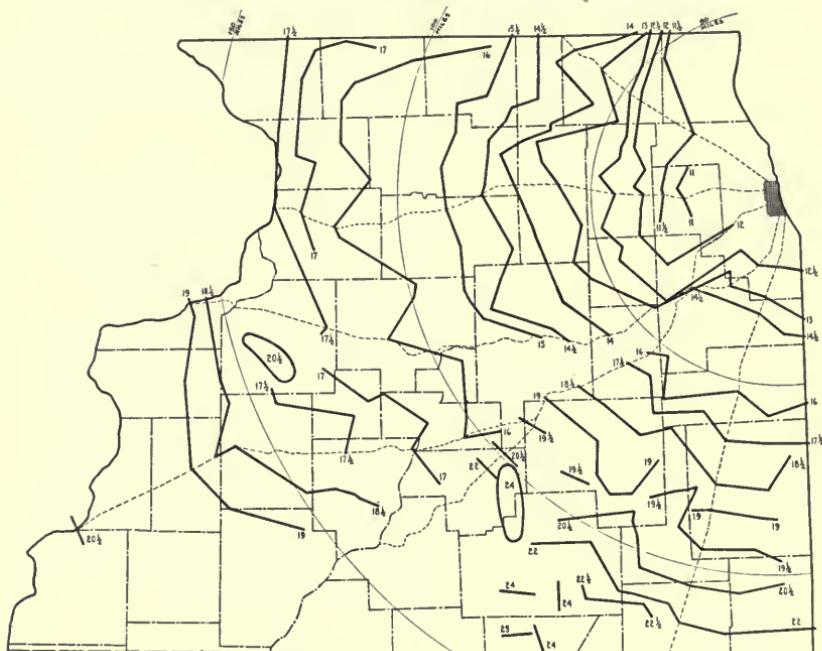


FIG. 17.—FREIGHT RATES ON CATTLE TO CHICAGO, 1927

For rate-making purposes, railroads early divided the country into districts or territories. The line of demarcation for rail rates in the area shown above runs diagonally from southwest to northeast, the rates in the southeastern part of the Chicago area being noticeably higher.

unsolvable puzzle. Yet livestock shippers deal with freight rates continuously and should have an understanding of how these rates affect their business.

In tabulating and analyzing the freight-rate data required in this study for a comparison of livestock transportation charges by rail and by truck, a large-size state map was used and livestock freight rates as of 1927, for each kind of livestock, were entered for each station in both the Chicago and in the East St. Louis territory. The next step was to attempt some form of graphic presentation that would show the principal rate variations and the outer

margin of each region or territory affected. The results are shown in the accompanying maps (Figs. 17 to 22).

Obviously it is impossible to indicate all rate variations on a small illustration and have the data readable. The plan adopted was to

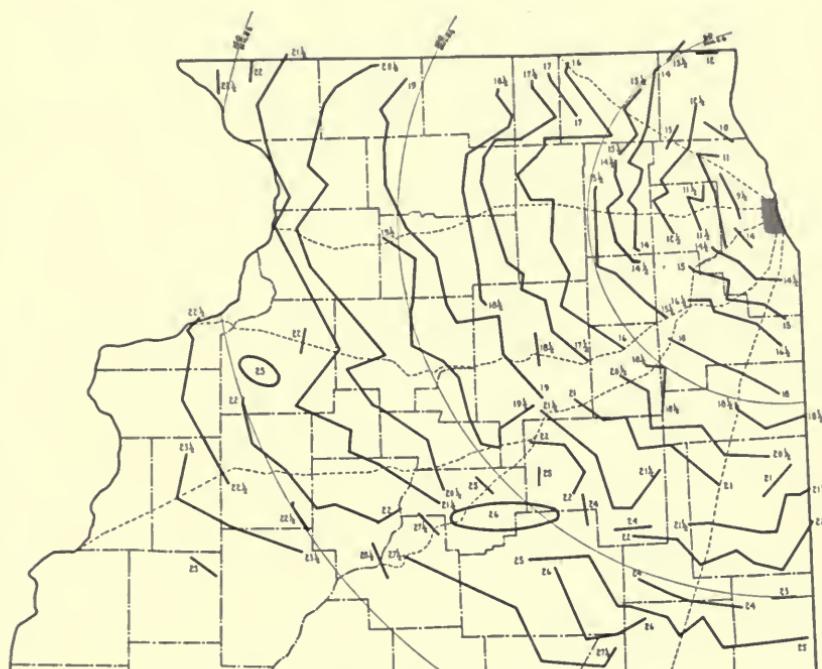


FIG. 18.—FREIGHT RATES ON HOGS TO CHICAGO, 1927

Note that rates on hogs are 2 or 3 cents higher in the southeastern part of the Chicago area.

connect up corresponding rate points on the principal main lines and to indicate by bars or circles single points or particular territories having markedly different rate situations. Frequently the circles show higher rates than other territory equally distant from the market concerned. Often the points thus affected are on branch lines, in many instances the rates being much higher. This condition is especially noticeable in the East St. Louis territory.

Truckage rates being established more on direct distances than are freight rates it is easy to see why truck competition is especially difficult for rail shipping associations located at these high-rate points.

Two Livestock Rate Systems in Illinois. In Figs. 17 and 18 note that rates in the southeastern part of the territory are higher than those to the north and west. This is due to different scales of freight

rates applying on intrastate shipments of Illinois livestock. The dividing line for livestock follows the A. T. & S. F. R.R. from Chicago to Streator to Peoria, thence the Illinois river to its junction with the Mississippi. Livestock rates are generally higher in the southern division.

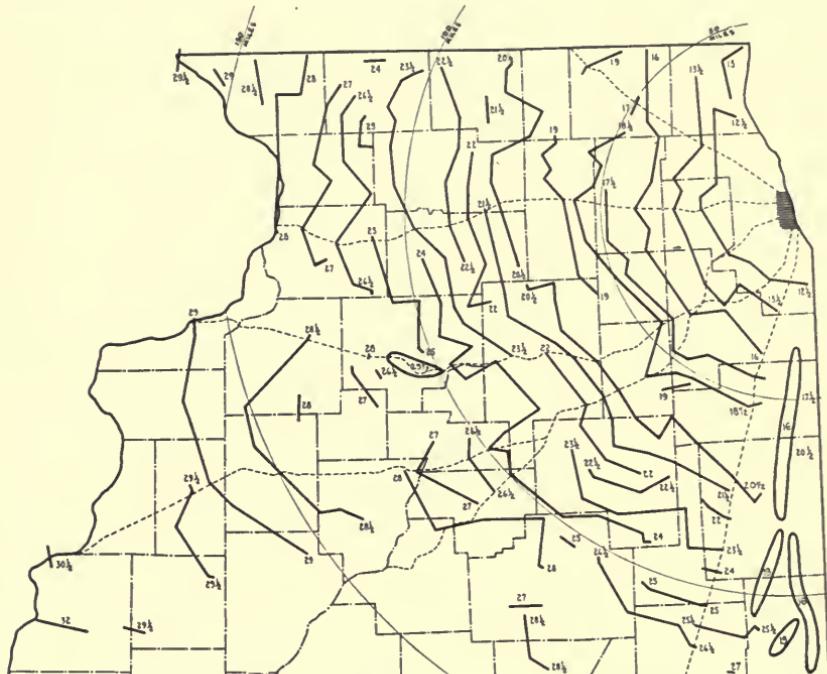


FIG. 19.—FREIGHT RATES ON SHEEP TO CHICAGO, 1927

Apparently sheep rates were affected but little by the two sets of intrastate rates in effect. Note the lower rates in effect on one railroad in the eastern edge of the area.

Numerous suggestions have appeared as to how the railroads might meet truck competition on livestock. They have included: (1) Lower minimum weights per carload. (2) Permission to load a car at more than one point at no additional charge. (3) Operation of route cars from certain points on certain days, to haul livestock and crated poultry and taking whatever livestock is offered at carlot rates. (4) Movement of livestock shipments by gasoline power where regular service is not available or stopping of heavy thru trains is too expensive. (5) Operation of feeder truck-in service by the railroads to bring the livestock from the farms to railroad loading points.

In this connection it is but fair to say that stockmen generally should be better informed as to the service rendered in their behalf

by the traffic departments of such organizations as the livestock exchanges, the Illinois Agricultural Association, and the American Farm Bureau Federation.

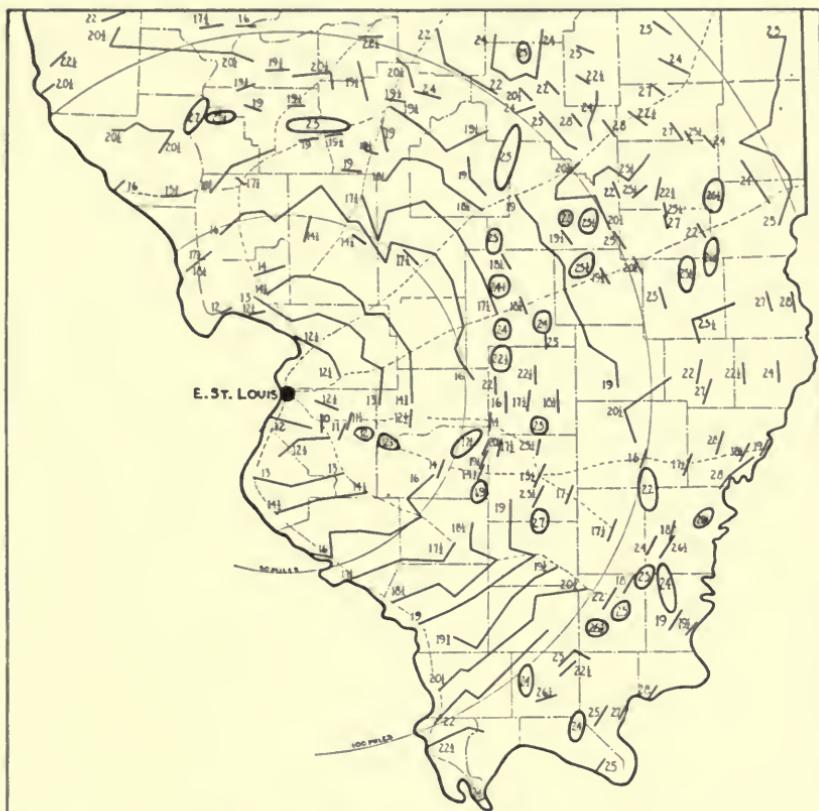


FIG. 20.—FREIGHT RATES ON CATTLE TO EAST ST. LOUIS, 1927

Rates shown in circles or small enclosed areas usually represent rates in effect at loading points on branch lines.

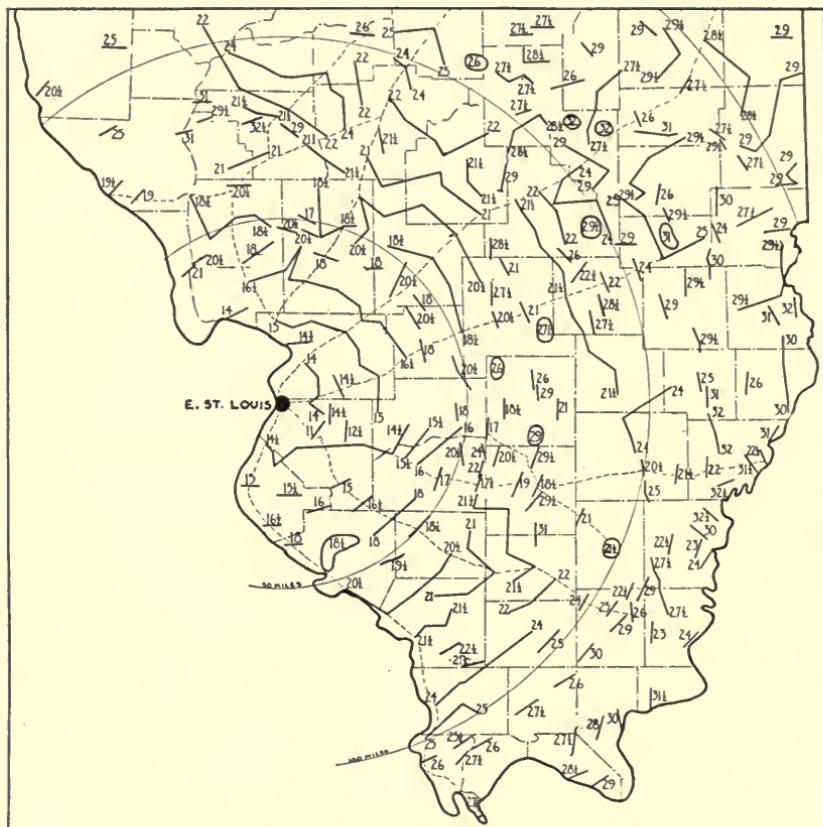


FIG. 21.—FREIGHT RATES ON HOGS TO EAST ST. LOUIS, 1927

Intrastate livestock freight rates are higher in southern Illinois than in the northern part of the state (see page 171).

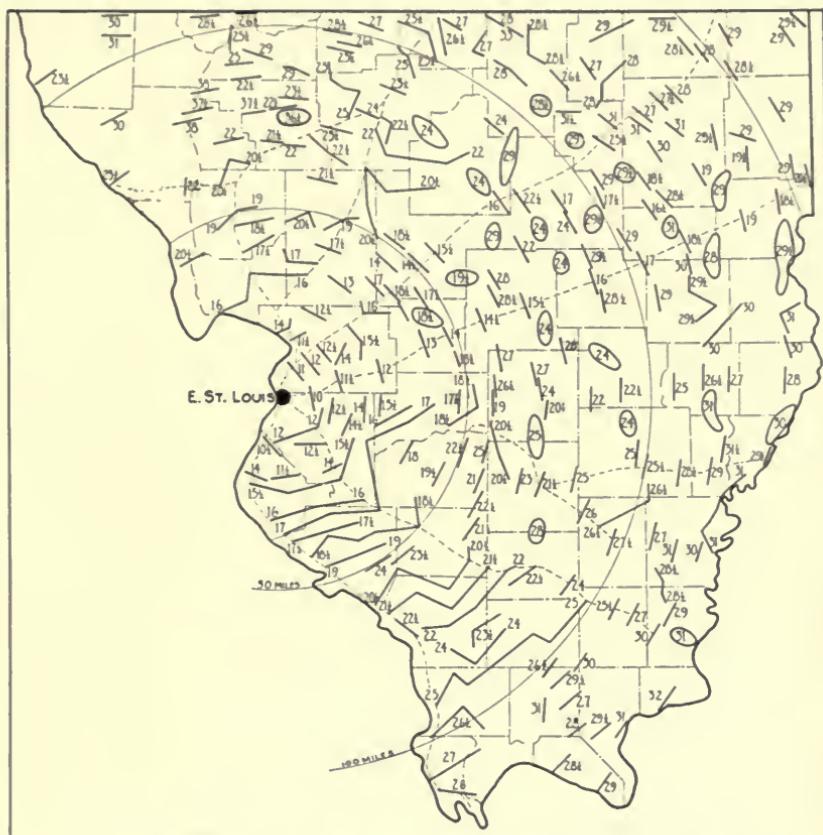


FIG. 22.—FREIGHT RATES ON SHEEP TO EAST ST. LOUIS, 1927

Many apparent irregularities are found which only a rate expert could explain.

medieval
quattrocento





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